Note remarks

Test sheet : DEE 10,1 a9 : 26.6.89 Edition : 5.3.87 Replaces Test oil : ISO-4113

Combination no. : 9 400 231 039

Injection pump

Pump designation : PES6P110A720RS370

Governor

Governor design. : RSV450...1050P0/465

Customer-spec. information Customer : JOHN DEERE

Engine : 6619A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 010

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6,00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

A01

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 17.4...17.6

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 450 2nd speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 1.9...2.5

100 s: (-) cm3 : 0.4Spread

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack cravel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 930

: 174.0...176.0 Del.quantity

1000 : (-) cm3 : 4.0

Spread 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1205...1235 Speed

4th rack travel in: 1300

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 21...29

Setting point w/out bumper spring Speed rpm : 450 Rack travel in mm: 5.5 Speed rpm : 450 Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 580...640
Speed rpm: 850 Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 2nd speed rpm : 650

Rack travel in m: 12.40...12.50 Rack travel in m: 13.65...13.75

Aneroid/Altitude Compensator Test

1st version Setting rpm : 500 Speed Pressure hPa : 590 Rack travel mm : 13.55...13.65

Measurement Speed 1/min: 500

1st pressure hPa : 280 Rack travel in m: 11.40...11.80

START CUT-OUT

1/min: 400...750 Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 930 rpm : 650 Del.quantity cm3/: 198.5...201.5 1000 s: (-) Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 124.0...132.0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

**S0A** 

HIGH IDLE

1st version Speed rpm : 1170 Del.quantity cm3/: 65.0...75.0 1000 s: (-)

LOW IDLE

rpm : 450 Speed Del.quantity cm3/: 19.0...25.0 1000 s: (-)

Remarks:

: JOHN DEERE # AR90118

Start-of-delivery mark at control-rod travel 10.5 mm and 150 after start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 10.50 : 1- 5- 6- 3- 4- 2-7- 8 Firing order Note remarks Test sheet : DEE 15.6 f : 02.05.89 : 17.8.87 Edition eartion Replaces Test oil : 0-45-90-135-180-225-Phasing : ISO-4113 270-315 Tolerance + - 0 : 0.50 (0.75) Combination no. : 9 400 231 128 Time to cyl. no. : 8 Injection pump Pump designation : PES8P110A120RS3111 BASIC SETTING EP type number : 9 410 231 020 Governor 1st speed rpm : 1050 Governor design. : RSV400...1050P2/435-Rack travel in mm : 9.50...9.60 : 9 420 234 084 Governer no. Del.quantity cm3/: 14.7...14.9 Customer-spec. information Customer : JOHN DEERE 100 s: (14.5...15.1) : 8955 T Engine Spread cm3 : 0.41st version kW : 216.0 100 s: (0.7) : 2100 Rated speed rpm : 400.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 4.6...4.3 Del.quantity cm3/ : 2.2...2.7 100 s: (2.0...3.0) cm3 : 0.4 Test oil inlet temp. OC : 38...42 Spread 100 s: (0.7) Overflow valve : 1 457 413 010 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -3 rpm : 800 Test nozzle holder Rack travel in mm : 0.30...1.00 : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening. pressure, bar : 172...175 1st version Speed rpm : 1050 Aneroid pressure h: 900 Test lines : 1 680 750 015 Del.quantity : 147.0...149.0 1000 : (145.0...151.0) Outside diameter cm3 : 4.00 Spread x Wall thickness 1000 : (7.50) : 6.00x3.00x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control lever per values \_\_\_\_ position degrees: 41...49 BEGINNING OF DELIVERY Testing: Test pressure, bar: 27...29 1st rack travel in: 8.50 Speed rpm : 1095...1105

2nd rack travel in: 4.00

Speed

rpm : 1155...1165

Prestroke mm

: 2.75...2.85

: (2.70...2.90)

4th rack travel in: 1275

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 4.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm: 400
Rack travel in mm: 4.60...4.80
Rack travel in mm: 2.00

rpm : 540...600 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 9.50...9.60

2nd speed rpm : 750

Rack travel in m: 10.40...10.60

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 550 hPa : 900 Speed Pressure

Rack travel mm : 10.40...10.60

Measurement

1/min: 550 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 390

Rack travel in m: 10.20...10.30

3rd pressure hPa : 280

Rack travel in m: 9.10...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 750

Del.quantity cm3/: 163.5...166.5

1000 s: (161.0...169.0)

Aneroid pressure h: -

rpm : 550 Speed

Del.quantity cm3/: 130.0...134.0

1000 s: (128.0...136.0)

BREAKAWAY

A04

1st version

1mm rack travel less than

full load rack tr: 8.50

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0

1000 s: (170.0...210.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 22.5...27.5

1000 s: (20.0...30.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

: JOHN DEERE : # AR103264

Start-of-delivery mark 16° cam angle after start of delivery cyl. 8

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 9 8 Edition : 07.04.89 Replaces : 14.1.88 Test oil : ISO-4113 Combination no. : 9 400 231 236 Injection pump Pump designation : PES6P110A720RS3083-1 EP type number : 9 410 231 027 Governor Governor design. : RSV475...1050P2A455-Governer no. : 9 420 234 172 Customer-spec. information Customer : JOHN DEERE : 6466A Engine 1st version kW : 151.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 9 681 271 022 Outside diameter x Wall thickness : 6.35x3.00x600 x Length mm

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 27...29

Insp. values in parentheses Set equal delivery quant.

: 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - D : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1050 Rack travel in mm : 11.70...11.80 Del.quantity cm3/: 13.6...13.9 100 s: (13.4...14.2) Spread cm3 : 0.4 100 s: (0.7) rpm : 475.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.4...1.9 100 s: (1.2...2.2) cm3 : 0.4 100 s: (0.7) Spread GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 : 136.5...139.5 Del.quantity 1000 : (134.0...142.0) : 4.00 Spread cm3 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 38...46 Testing: 1st rack travel in: 10.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00

A05

rpm : 1145...1155 Speed

3rd rack travel in: 4.00

Speed rpm : 1150...1170

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 475 Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 475

Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00

rpm : 650...710 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050
Rack travel in m: 11.70...11.80
2nd speed rpm : 700

Rack travel in m: 12.10...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 139.5...143.5 1000 s: (136.5...146.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 475
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 14.5...19.5

1000 s: (12.0...22.0)

cm3 : 4.50 Spread

1000 s: (7,50)

Remarks:

: JOHN DEERE # RE30252

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Starting/full-load transition speed

from holding magnet = 450 1/min.

Start-of-delivery mark 12° cam angle

after start of delivery cyl. 1.

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : MB 5,7 v 17 : 02.05.89 Edition Replaces : 19.12.88 Test oil : ISO-4113 Combination no. : 9 407 083 267 Injection pump Pump designation : PES6A90D410RS2596 EP type number : 0 410 896 073 Governor Governor design. : RQV300...1400AB1145L Governer no. : 9 420 080 148 Customer-spec. information Customer : DIMLER-BENZ Engine : 0M352 1st version kW : 116.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2,00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_ BEGINNING OF DELIVERY

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1400 Rack travel in mm : 12.20...12.30 Del.quantity cm3/: 6.8...6.9 100 s: (6.6...7.1) Spread cm3 : 0.3100 s: (0.5) rpm : 300.0 2nd speed Rack travel in mm: 9.4...9.6 Del.quantity cm3/: 1.2...1.6 100 s: (1.0...1.8) Spread cm3 : 0.2100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 0.80...1.30 travel mm rpm : 500 2nd speed : 2.30...2.80 travel mm rpm : 750 3rd speed travel mm : 4.10...4.30 : 1500 4th speed rpm : 8.50...8.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1400 Speed Del.quantity : 68.0...69.0 1000 : (66.0...71.0) cm3 : 3.00 Spread 1000 : (5.00) RATED SPEED

: 1-5-3-6-2-4

A07

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.00...2.10

: (1.95...2.15)

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.15

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1570...1600 4th rack travel in: 1750

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 20...28

Testing:

Speed rpm : 100 Minimum rack trave: 11.00 Speed rpm : 300

Rack travel in mm : 9.40...9.60 Rack travel in mm : 2.00

rpm : 570...630 Speed

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 49.5...51.5 1000 s: (47.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.15

rpm : 1440...1450 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 73.0...83.0

1000 s: (70.0...86.0)

Rack travel in mm : 15.60...16.00

Remarks:

Note inst. in remarks column

Test sheet : OPE 2,3 M6 : 19.07.89 Edition : 18.07.88 replaces Calibrating oil : ISO 4113

Injection pump Type number : VE 4/10F2100 L297-1 : 0 460 404 056 Type number

Customer-specific information Customer : OPEL

Engine : 2,3 YDT

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting: Piston stroke mm: 1.0 Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value mm: 5,1...5,5 KSB solenoid-operated volt: 12.0

Supply-pump pressure:

1/min: 1500 Charge press. hPa: 1000 Setting value bar: 5,4...6,0 KSB solenoid-operated valve volt: 12.0

Full-load del. with charge press .:

1/min: 1200 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 62,5...63,5

KSB solenoid-operated valve volt: 12,0 cm3/:3,0Dispersion

1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 500 Del.quantity cm3/

1000H.: 40,5...41,5

KSB solenoid-operated volt: 12,0

Low-idle speed regulation:

1/min: 290

Del.quantity cm3/ 1000H.: 13,5...17,5

KSB solenoid-operated valve volt: 12,0 cm3/: 3,0 Dispersion 1000H.: (3,0)

Full-load speed regulation:

1/min: 2500 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 15,0...21,0

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed

Del.quantity : 57,0...59,0

mind cm3/1000H.: -KSB solenoid-operated volt: 12.0

Load-dependent start of delivery:

Speed 1/min: 1500

A09

KSB solenoid-operated Test specifications in parentheses volt: 12,0 valve 1/min: 1500 Timing-device characteristic: 3rd speed Charge press. hPa: 1000 Supply-pump 1/min: 300 pressure 1st speed bar: 5,4...6,0 Charge press. hPa: 1000 KSB solenoid-operated TD travel mm: 1.5...3,5 valve volt: 12,0 mm: (1,3...3,7)1/min: 2100 4th speed KSB solenoid-operated Charge press. hPa: 1000 valve volt: -Supply-pump bar: 6,9...7,5 1/min: 800 pressure 2nd speed Charge press. hPa: 1000 KSB solenoid-operated TD travel mm: 3,5...5,9 valve volt: 12,0 mm: (2,9...6,5)KSB solenoid-operated Overflow quantity at overflow valve: valve volt: 1/min: 1200 3rd speed 1st speed 1/min: 500 Charge press. hPa: 1000 Charge press. hPa: mm: 3,8...6,2 TD travel KSB solenoid-operated mm: valve volt: 12,0 KSB solenoid-operated Oveflow : 41...83 quantity cm3/10s: (26...98) valve volt: -1/min: 800 4th speed 1/min: 2100 2nd speed Charge press. hPa: 1000 Charge press. hPa: 1000 TD travel mm: 1,1...1,9 KSB solenoid-operated mm: (0,8...2,2)volt: 12,0 valve : 55...138 KSB solenoid-operated Over flow volt: 12,0 quantity cm3/10s: (40...153) valve 1/min: 1200 5th speed Charge press. hPa: 1000 Delivery-quant. and breakaway char.: mm: 3,5...4,1 mm: (3,1...4,5) TD travel 1/min: 800\* ist speed KSB solenoid-operated Charge-air pressure-setting valve volt: 12,0 hPa: 500 point 1/min: 1500 6th speed mm: 6,5 LDA stroke Charge press. hPa: 1000 KSB solenoid-operated mm: 5,1...5,5 TD travel volt: 12,0 valve Del.quantity cm3/: 59.5...60.5 1000H.: (57.0...63.0) 2nd speed 1/min: 2700 mm: (4,6...6,0)KSB solenoid-operated volt: 12.0 valve Charge press. hPa: 1000 1/min: 2100 KSB solenoid-operated 1st speed Charge press. hPa: 1000 volt: 12,0 valve mm: 7,8...8,6 mm: (7,5...8,9) Del.quantity cm3/: 0,0...6,0 1000H.: -TD travel 1/min: 2500 3rd speed Charge press. hPa: 1000 Supply-pump pressure characteristic: KSB solenoid-operated valve volt: 12,0
Del.quantity cm3/: 15,0...21,0
1000H.: (14,0...22,0)
4th speed 1/min: 2100 1/min: 300 1st speed Charge press. hPa: 1000 Supply-pump bar: 4,2...4,8 pressure KSB solenoid-operated Charge press. hPa: 1000 valve volt: -KSB solenoid-operated 1/min: 1200 volt: 12,0 2nd speed valve Del.quantity cm3/: 51,3...53,7 Charge press. hPa: 1000 1000H.: (50,2...54,8)

Inspection-pump test specifications

Supply-pump

bar: 4,6...5,2

pressure

5th speed 1/min: 1200 Charge press. hPa: 1000 KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 62,5...63,5 1000H.: (60,7...65,3) 1/min: 800 6th speed Charge press. hPa: 500 KSB solenoid-operated volt: 12.0 cm3/: 59,5...60,5 Del.quantity 1000Ha: (56,0...63,0) 1/min: 800 7th speed Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 60,5...63,5 1000H .: 1/min: 800 8th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 40,5...43,5 1000H: -1/min: 500 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 40,5...41,5 1000H: (38,7...43,3) Zero delivery (stop): Electr. shutoff:

Speed 1/min: 290
ELAB volt: Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

## Idle delivery:

1st speed 1/min: 290 KSB solenoid-operated volt: 12.0 cm3/: 13.5..17.5 valve Deliquantity 1000H.: (11,5..19,5) 1/min: 320 2nd speed KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 7,0...13,0 1000H.: (6,5...13,5) 1/min: 380 3rd speed KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 0.0...2.6 1000H.: (0.0...2.6)

Automatic starting fuel delivery:

1st speed 1/min: 250 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: ind. 1000H: 55,0

Znd speed 1/min: 400 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: max. 1000H: 50,0

3rd speed 1/min: 100 Del.quantity cm3/: (50,0..66,0) 1000H: -

## Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4 KF mm : 5,6...6,9 MS mm : 0,8...1,2

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : SOF 2.5P : 18.07.89 Edition : 27.07.88 replaces : ISO 4113 Calibrating oil

: VE 4/10F2050 R318 Injection pump Type number : 0 460 404 059

Customer-specific information Customer : IVECO-SOFIM

: 8144.97.2200 Engine

Power k: 83

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Indicator setting:

Piston stroke mm: 1.0 **Outlet** : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 600 Speed Charge press. hPa: 800 mm: 0,9...1,3 Setting value

Supply-pump pressure:

Speed 1/min: 600 Charge press. hPa: 800 Setting value bar: 3,4...4.0

Full-load del. with charge press.:

Speed 1/min: 1200 Charge press. hPa: 800

Del.quantity cm3/ 1000H.: 62,5...65,5

cm3/:3.0Dispersion 1000H : (3,0)

Full-load del. W/out charge press.:

Speed 1/min : 500

Deliquantity cm3/

1000H.: 42,5...43,5

Low-idle speed regulation:

1/min: 425 Speed

Del.quantity cm3/ 1000H.: 12,5...16,5

Full-load speed regulation:

Speed 1/min: 2475 Charge press. hPa: 800

Del.quantity cm3/

1000H: 14,0...20,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 600 Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 800

TD travel mm: 0,9...1,3

mm: (0,6...1,6)

1/min: 1200 2nd speed Charge press. hPa: 800

mm: 4,2...5,0 mm: (3,9...5,3) TD travel

3rd speed 1/min: 2000

Charge press. hPa: 800 TD travel mm: 8,79,5	7th speed 1/min: 1200 Charge press. hPa: 800
mm: (8,49,8) 4th speed 1/min: 2300	Del.quantity cm3/: 62,565,5 1000H.: -
TD travel mm: 10,010,8	8th speed 1/min: 600
mm: -	Charge press. hPa: 290
	Del.quantity cm3/: 53,054,0
Supply-pump pressure characteristic:	1000H: (51.056.0)
	1000H: (51,056,0) 9th speed 1/min: 500
1st speed 1/min: 600	Charge press. hPa: -
Charge press. hPa: 800	Del.quantity cm3/: 42_543_5
Supply-pump	1000H: (40,545,5)
pressure bar: 3,44,0	1000 (10,200
2nd speed 1/min: 1200	Zero delivery (stop):
Charge press. hPa: 800	and addition y to dope !
Supply-pump	
pressure bar: 5,25,8	Electr. shutoff:
3rd speed 1/min: 2000	2.00 d r offacorti
Charge press. hPa: 800	Speed 1/min: 425
Supply-pump !	ELAB volt: -
pressure bar: 7,27,8	
1	Del.quantity cm3/: 0,03,0 max. 1000H.: -
Overflow quantity at overflow valve:	max.
1	Idle delivery:
1st speed 1/min: 500	auto dottion y t
Oveflow : 4183	1st speed
quantity cm3/10s: (2698)	Del. quantity cm3/: 12.516.5
2nd speed 1/min: 2050	Del.quantity cm3/: 12,516,5 1000H.: (10,518,5)
Charge press. hPa: 800	2nd speed 1/min: 500
Overflow : 55138	Del. quantity cm3/: 5.510.5
quantity cm3/10s: (40153)	Del.quantity cm3/: 5,510,5 1000H.: -
	3rd speed 1/min: 700
Delivery-quant. and breakaway char.: İ	Del.quantity cm3/: 2,05,0
, quanta and a canal a	1000H.: -
1st speed 1/min: 600*	
Charge-air pressure-setting	Automatic starting fuel delivery:
point hPa: 290	
LDA stroke mm: 5,3	
Del.quantity cm3/: 53,054,0	2nd speed 1/min: 350
1000H.: (51,056,0)	Del.quantity cm3/: -
2nd speed 1/min: 2550	max. 1000H: 90,0
Charge press. hPa: 800	
Del.quantity cm3/: 0,06,0	Shutoff electromagnet:
1000H.: -	• • • • • • • • • • • • • • • • • • • •
3rd speed 1/min: 2475	Cut-in
Charge press. hPa: 800	min. voltage : 10,0
Delaquantity cm3/: 14,020,0	Rated voltage : 10,0
1000H.: (13,021,0)	•
4th speed 1/min: 2350	Mounting and assembly dimensions:
Charge press. hPa: 800	•
Del.quantity cm3/: 35,043,0	Designation
1000H.: -	K mm : -
5th speed 1/min: 2050	KF mm: 5,66,0
Charge press. hPa: 800	MS mm : 1,62,0
Deliquantity cm3/: 54,057,0 [	XK   mm : 20, 022, 0
1000H.: (53,357,7)	XL mm : 11,815,2
6th speed 1/min: 1950	
Charge press. hPa: 800	Remarks:
Del.quantity cm3/: 56,057,0	
1000H.: (54,558,5)	<pre>* Correction at adjusting nut (46)</pre>

Note inst. in remarks column

: CUM 3,9 E Test sheet : 11.07.89 Edition : 02.08.88 replaces : ISO 4113 Calibrating oil

: VE 4/12F1100 R226 Injection pump Type number : 0 460 424 022

Customer-specific information

Customer : CDC

: 4 BT 390 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening.

pressure bar: 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm: 0,3 Prestroke

(from BDC): +0,02(0,04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0,02 (0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,3...2,7

A15

Supply-pump pressure:

Speed 1/min: 900

Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min: 900

Del.quantity cm3/

1000Ha: 67,5...68,5

cm3/: 4,0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 335

Del.quantity cm3/

1000H.: 8,0...14,0

cm3/: 5,5 Dispersion

1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1150

Del.quantity cm3/

1000H: 53.0...59.0

Start:

1/min: 100 Speed

Del.quantity

cm3/1000H.: 70,0 mind '

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel mm: 1,3...2,1

mm: (1,0...2,4)

1/min: 900 2nd speed

mm: 2,3...2,7 mm: (1,8...3,2) TD travel

1/min: 1100

3rd speed TD travel

mm: 3,1...3,9 mm: (2,8...4,2)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,3...2,9 pressure

1/min: 900 2nd speed

Supply-pump

pressure bar: 4,1...4,7

3rd speed 1/min: 1100

Supply-pump bar: 4,9...5,5 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 1100 2nd speed : 55...138 Over flow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1250 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1220 Del.quantity cm3/: 0,0...15,0 1000H .: -3rd speed 1/min: 1180 cm3/: 15,0...55,0 Del.quantity 1000H.: 1/min: 1150 4th speed Del.quantity cm3/: 53,0...59,0 1000H.: (50,0...62,0) 5th speed 1/min: 1100 cm3/: 64,5...67,5 1000H.: (63,0...69,0) Del.quantity 1/min: 900 6th speed cm3/: 67.5...68.5 1000H.: (65.0...71.0) 1/min: 750 Del.quantity 7th speed Del.quantity cm3/: 70.0...74.0 1000H.: (68.0...76.0) 8th speed 1/min: 500 Del.quantity cm3/: 69\_0...77\_0 1000H: (67\_0...79\_0) Zero delivery (stop): Mech. shutoff: Speed Deliquantity cms/: 0 1000H.: -1/min: 1100 Speed cm3/: 0..3 Electr. shutoff: Speed 1/min: 335 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery:

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 80,0 ind. 2nd speed 1/min: 240 Del.quantity cm3/: -1000H : 80,0 Shutoff electromagnet: Cut-in : 10,0 min. voltage Rated voltage : 12,0 Mounting and assembly dimensions: Designation mm KF : 5,0...5,4 min MS mm : 1.1...1.5 SVS max. : 3,2 mm : 18,8...20,8 XK Tim XL 6 و 15 ـ . . . 2 و 13 : mm Remarks: : C.D.C. # 390 8185

1st speed 1/min: 335
Del.quantity cm3/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500

A16

Note inst. in remarks column

Test sheet : CUM 3,9E1 Edition : 13.07.89 replaces : 02.08.88 Calibrating oil : ISO 4113

: VE 4/12F1150 R226-1 Injection pump

: 0 460 424 023 Type number

Customer-specific information

Customer : CDC

: 4 BT 390 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test in i. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0,92(0,06)

Start of delivery block

Piston stroke mm: 1,8

mm: +-0,02(0,06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed Setting value mm: 2.0...2.4

A17

Supply-pump pressure:

1/min: 900

Setting value bar: 4,2...4,8

Full-load del. W/out charge press.:

1/min : 900 Speed

Del.quantity cm3/

1000H.: 67,0...68,0

cm3/: 4.0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Deliquantity cm3/

1000H.: 8,0...14,0 cm3/: 5,5

Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1190

Del.quantity cm3/

1000H: 47,0...53,0

Start:

Špeed 1/min: 100 Del.quantity

mind cm3/1000H.: 70.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel

mm: 0.8...1.6 mm: (0.5...1.9)

1/min: 900 2nd speed

mm: (1,5...2,9) TD travel

1/min: 1150 3rd speed

TD travel mm: 3,2...4,0

mm: (2,9...4,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2,5...3,1 pressure

1/min: 900 2nd speed

Supply-pump

pressure bar: 4,2...4,8

1/min: 1150 3rd speed

Supply-pump pressure bar: 5,2...5,8 Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 1150 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1300 1st speed Del.quantity cm3/: 0,0...3,0 100CH.: (0,0...3,0) 1/min: 1260 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: (0.0...15.0) 3rd speed 1/min: 1220 Del.quantity cm3/: 15,0...55,0 1000H.: (15,0...55,0) 1/min: 1190 4th speed cm3/: 47,0...53,0 Del.quantity 1000H.: (44,0...56,0) 1/min: 1150 5th speed Del.quantity cm3/: 63,5...66,5 1000H.: (62.0...68,0) 1/min: 900 6th speed Del.quantity cm3/: 67,0...68,0 1000H.: (64,5...70,5) 1/min: 750 7th speed Del.quantity cm3/: 69,5...73,5 1000H.: (67,5...75,5) 1/min: 500 8th speed cm3/: 68,0...76,0 Del.quantity 1000H: (66,0...78,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1150 Del.quantity cm3/: 0..3 1000H .: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: mex. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

1/min: 500

Del.quantity cm3/: 0.0...4.0
1000H.: (0.0...4.0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: ind. 1000H: 80.0

2nd speed 1/min: 240
Del.quantity cm3/: max. 1000H: 80.0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,1...1,5
SVS max. mm : 4,0

Remarks:

: C.D.C. # 390 8184

2nd speed

Note inst. in remarks column

Test sheet : CUM 3,9 E5 : 13.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R226-1

Type number : 0 460 424 023

Customer Part-No.: 3 908 193

Customer-specific information

Customer : CDC

Engine : 4 BT 390

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.06)

Start of delivery block Piston stroke mm: 1,8

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

A19

4ر2...2رSetting value mm: 2

Supply-pump pressure:

Speed 1/min: 900

Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

1/min: 900 Speed

Del.quantity cm3/

1000H.: 67,0...68,0

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 8,0...14,0

cm3/: 5,5 Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1190 Speed

Deliquantity cm3/

1000H: 47,0...53,0

Start:

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

TD travel mm: 0,8...1,6 mm: (0,5...1,9)

1/min: 900 2nd speed

TD trave! mm: 2,0...2,4

mm: (1,5...2,9)

1/min: 1150 3rd speed

TD travel

mm: 3,2...4,0mm: (2,9...4,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

pressure bar: 2,5...3,1

1/min: 900 2nd speed

Supply-pump

bar: 4,2...4,8 pressure

3rd speed 1/min: 1150

Supply-pump bar: 5,2...5,8 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1150 2nd speed Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1300 Del.quantity cm3/: 0,0...3,01000H.: (0,0...3,0) 1/min: 1260 2nd speed Del.quantity cm3/: 0,0...15,0 1000H.: (0,0...15,0) 3rd speed 1/min: 1220 Del.quantity cm3/: 15.0...55.0 1000H.: (15.0...55.0) 1/min: 1190 4th speed Del.quantity cm3/: 47,0...53,0 1000H.: (44,0...56,0) 5th speed 1/min: 1150 Del.quantity cm3/: 63,5...66,5 1000H.: (62.0...68,0) 1/min: 900 6th speed Del.quantity cm3/: 67,0...68,0 1000H.: (64,5...70,5) 1/min: 750 7th speed Del.quantity cm3/: 69,5...73,5 1000H.: (67,5...75,5) 1/min: 500 8th speed Del.quantity cm3/: 68,0...76.0 1000H: (66,0...78,0) Zero delivery (stop): Mech. shutoff: 1/min: 1150 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0

1000H.: (6,0...16,0)

1/min: 500

2nd speed

**A20** 

Del.quantity cm3/: 0,0...4,0 1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 80,0

2nd speed 1/min: 240 Del.quantity cm3/: - max. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

Remarks:

K mm : KF mm : 5,0...5,4
MS mm : 1,1...1,5
SVS max. mm : 4,0

:

Note inst. in remarks column

: CUM 5.9 T : 13.07.89 Test sheet Edition : 09.11.88 replaces Calibrating oil : ISO 4113

Injection pump : VE 6/12F1000 R225-12

Type number : 0 460 426 081

Customer-specific information

Customer

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil oC return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +-0,02(0,04)

Start of delivery block mm: 1,0 Piston stroke

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,3...3,7

A21

Supply-pump pressure:

1/min: 750 Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 750

Deliquantity cm3/

1000H.: 46,5...47,5

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 365

Del.quantity cm3/

1000H.: 8,0...14,0

cm3/: 5,5 1000H.: (7,0) Dispersion

Full-load speed regulation:

Speed 1/min: 1050

Deliquantity cm3/

1000H: 30,0...36,0

Start:

Speed 1/min: 100

Del.quantity

mind cm3/1000H.: 40.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,1...1,9

mm: (0,8...2,2)

2nd speed 1/min: 750

TD travel

mm: 3,3...3,7 mm: (2,8...4,2) 1/min: 1000

3rd speed

TD travel

mm: 5,3...6,1 mm: (5,0...6,4)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,5...4,1 1/min: 1000 pressure

3rd speed

Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) 1/min: 1000 quantity 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1150 cm3/: 0.0..3.0Del.quantity 1000H.: (0,0...3,0) 1/min: 1100 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: (0.0...15.0) 1/min: 1060 3rd speed Del.quantity cm3/: 15,0...45,0 1000H.: (15,0...45,0) 1/min: 1050 4th speed Del.quantity cm3/: 30,0...36,0 1000H.: (27,0...39,0) 1/min: 1000 5th speed Del.quantity cm3/: 44,5...47,5 1000H.: (43,0...49,0) 1/min: 900 6th speed Del.quantity cm3/: 46,5...49,5 1000H.: (44,5...51,5) 1/min: 750 7th speed Del.quantity cm3/: 46,5...47,5 1000H.: (43,0...50,0) 1/min: 500 8th speed cm3/: 33,0...41,0 Del.quantity 1000H: (31\_0...43\_0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1000 Del.quantity cm3/: 0..3 1000H .: -Electr. shutoff: Speed 1/min: 365 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1st speed 1/min: 365 Del.quantity cm3/: 8,0...14,0

1000H.: (6,0...16,0)

1/min: 450

Del.quantity cm3/: 0,0...4,0 1000H.: (0,0...4,0) Automatic starting fuel delivery: 1st speed 1/min: 200 Del.quantity cm3/: -

ind. 1000H: 45,0 2nd speed 1/min: 370 Del.quantity cm3/: -

Del.quantity cm3/: - max. 1000H: 50,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 1,5
XK mm : 18,8...20,8
XL mm : 8,9...12,3

Remarks:

: C.D.C. # 390 8204

2nd speed

Note inst. in remarks column

Test sheet : CUM 5,9 T6 : 13.07.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1000 R225-12 Injection pump

: 0 460 426 081 Type number

Customer Part-No.: 3 908 211

Customer-specific information

Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness mm: 840 x Length

Start of delivery

Prestroke mm : 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.0

mm: +-0,02(0,06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

A23

Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min : 750 Speed

Deliquantity cm3/

1000H.: 46,5...47,5

cm3/: 4.0Dispersion

1000H.: (4,5)

Low-idle speed regulation:

1/min: 365 Speed

Del.quantity cm3/

1000H.: 8,0...14,0

cm3/: 5.5 1000H.: (7,0) Dispersion

Full-load speed regulation:

1/min: 1050 Speed

Del.quantity cm3/

1000H: 30,0...36,0

Start:

1/min: 100 Speed Del. quantity

cm3/1000H.: 40.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1.1...1.9

mm: (0,8...2,2)

750 2nd speed 1/min:

TD travel mm: 3,3...3,7

mm: (2,8...4,2)

1/min: 1000 3rd speed

TD travel

mm: 5,3...6,1mm: (5,0...6,4)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,5...4,1 pressure

3rd speed 1/min: 1000

Supply-pump bar: 4,6...5,2 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1000 2nd speed 55...138 Over flow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1150 Del.quantity cm3/: 0,0...3,0 1000H.: (0,0...3,0) 1/min: 1100 2nd speed Del.quantity cm3/: 0,0...15,0 1000H.: (0,0...15,0) 1/min: 1060 3rd speed Del.quantity cm3/: 15.0...45.0 1000H.: (15.0...45.0) 1/min: 1050 4th speed Del.quantity cm3/: 30,0...36,0 1000H.: (27,0...39,0) 1/min: 1000 5th speed Del.quantity cm3/: 44.5...47.5 1000H.: (43.0...49.0) 1/min: 900 6th speed Del.quantity cm3/: 46,5...49,5 1000H.: (44,5...51,5) 1/min: 750 7th speed cm3/: 46,5...47,5 1000H.: (43,0...50,0) Del.quantity 1/min: 500 8th speed Del.quantity cm3/: 33,0...41,0 1000H: (31,0...43,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1000 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 365 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery:

Deliquantity cm3/: 0,0...4,0 1000H.: (0,0...4,0) Automatic starting fuel delivery: 1st speed 1/min: 200 Del.quantity cm3/: -1000H: 45,0 ind. 2nd speed 1/min: 370 Del.quantity cm3/: -1000H : 50,0 max. Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K MID KF 4ر5...5ر5 : mm MS 4ر1 . . . . 0 ر 1 mm SVS max. : 1,5 mm XΚ 8,20,30 mm XL 3ر 12 . . . 9 و 8 mm Remarks:

1/min: 365 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

2nd speed 1/min: 450

A24

Note inst. in remarks column

: CUM 5,9 W2 Test sheet Edition : 13.07.89 replaces : 14.07.88 : ISO 4113 Calibrating oil

: VE 6/12F1100 R225-17 Injection pump

: 0 460 426 118 Type number

Customer Part-No. :

Customer-specific information

Customer

: 6BT- 5.9 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening.

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0,002(0,06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Setting value mm: 4,2...4,6

Supply-pump pressure:

1/min: 900

Setting value bar: 4,7...5,3

Full-load del. w/out charge press.:

1/min: 1000 Speed

Del.quantity cm3/

1000H.: 63,2...64,2

cm3/: 4,0 Dispersion 1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 9,0...11,0

cm3/: 5,5 Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1150

Deliquantity cm3/

1000H: 44,3...50,3

Start:

1/min: 100 Speed

Del.quantity cm3/1000H.: 70.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel mm: 2,9...3,7

mm: (2,6...4,0)

1/min: 900 2nd speed

TD travel

mm: 4,2...4,6 mm: (3,7...5,1)

3rd speed 1/min: 1100

mm: 5,5...6,3 mm: (5,2...6,6) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,9...3,5 pressure

1/min: 750 2nd speed

Supply-pump

pressure bar: 4,0...4,6

1/min: 900 3rd speed Supply-pump bar: 4,7...5,3 pressure 4th speed 1/min: 1100 Supply-pump pressure bar: 5,5...6,1 Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1100 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1240 Del.quantity cm3/: 0,0...3,0 1000H.: (0,0...3,0) 1/min: 1220 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: (0.0...15.0) 3rd speed 1/min: 1180 Del.quantity cm3/: 15.0...55.0 Del.quantity cm3/: 44,3...50,3 1000H.: (41,3...53,3) 1/min: 1100 5th speed Del.quantity cm3/: 62.0...65.0 1000H.: (60.5...66.5) 6th speed 1/min: 1000 Del.quantity cm3/: 63,2...64,2 1000H.: (60,7...66,7) 7th speed 1/min: 750
Del.quantity cm3/: 78,5...82,5 1000H.: (76,5...84,5) 1/min: 500 8th speed Del.quantity cm3/: 81,5...91,5 1000H: (80,5...92,5) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery:

1st speed 1/min: 375
Del.quantity cm3/: 9,0...11,0
1000H.: (5,0...15,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: (0,0...4,0)
Automatic starting fuel delivery:

1st speed 1/min: 270
Del.quantity cm3/: ind. 1000H: 90,0

2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 90,0

Shutoff electromagnet:

Cut-in min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

XK mm : 18,8...20,8 XL mm : 10,9...14,3

Remarks: : C.D.C. # 3 912 126

Note inst. in remarks column

: CUM 5,9 W3 Test sheet : 13.07.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R225-17 Injection pump

: 0 460 426 118 Type number

Customer Part-No.: 3 912 125

Customer-specific information

Customer : CDC

Engine : 6BT- 5.9

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.002(0.06)

**Outlet** : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

A27

Setting value mm: 4,2...4,6

Supply-pump pressure:

1/min: 900 Speed

Setting value bar: 4,7...5,3

Full-load del. w/out charge press.:

1/min : 1000

Del.quantity cm3/

1000H.: 63,2...64,2

Dispersion cm3/: 4,0

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 9,0...11,0 cm3/: 5,5

Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1150 Speed

Deliquantity cm3/

1000H: 44,3...50,3

Start:

Speed 1/min: 100

Del.quantity

cm3/1000H.: 70,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel mm: 2,9...3,7

mm: (2,6...4,0)

1/min: 900 2nd speed

mm: 4,2...4,6 mm: (3,7...5,1) TD travei

1/min: 1100

3rd speed TD travel

mm: 5,5...6,3 mm: (5,2...6,6)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2,9...3,5 1/min: 750 pressure

2nd speed

Supply-pump

bar: 4,0...4,6 pressure

3rd speed 1/min: 900

Supply-pump bar: 4,7...5,3 pressure 1/min: 1100 4th speed Supply-pump bar: 5,5...6,1 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1100 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1240 Del.quantity cm3/: 0,0...3,0 1000H.: (0,0...3,0) 1/min: 1220 2nd speed Del.quantity cm3/: 0,0...15,0)
1000H.: (0,0...15,0)
3rd speed 1/min: 1180 Del.quantity cm3/: 15,0...55,0 1000H.: (0,0...40,0) 4th speed 1/min: 1150 Del.quantity cm3/: 44,3...50,3 1000H.: (41,3...53,3) 1/min: 1100 5th speed Del.quantity cm3/: 62,0...65,0 1000H.: (60,5...66,5) 1/min: 1000 6th speed Del.quantity cm3/: 63,2...64,2 1000H.: (60,7...66,7) 7th speed 1/min: 750
Del.quantity cm3/: 78,5...82,5 1000H.: (76,5...84,5) 1/min: 500 8th speed Del.quantity cm3/: 81,5...91,5 1000H: (80,5...92,5) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1/min: 375 1st speed

A28

Del.quantity cm3/: 9.0...11.0 1000H.: (5.0...15.0) 1/min: 450 2nd speed Del.quantity cm3/: 0,0...4,0) Automatic starting fuel delivery: 1st speed 1/min: 270 Deliquantity cm3/: ind. 1000H: 90,0 1/min: 400 2nd speed Del.quantity cm3/: - max. 1000H: 90,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,0...5,4 **KF** mm : 1,3...1,7 MS mm XK : 18,8...20,8 mm mm : 10,9...14,3 Remarks: \$ W . . .

Note inst. in remarks column

Test sheet : FIA 5.5 R
Edition : 19.07.89
replaces : 18.01.89
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1350 R329 Type number : 0 460 426 119

Customer-specific information Customer : IVECO-FIAT

Engine : 8060.25.221

Power k: 110

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

pressure bar: 172...175

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value mm: 3,0...3,4

Supply-pump pressure:

**BO1** 

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value bar: 7,7...8,3

Full-load del. with charge press.:

Speed 1/min: 1200 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 103,5...104,5

Dispersion cm3/: 5.0 1000H: -

Full-load del. w/out charge press.:

Speed 1/min: 500

Del.quantity cm3/

1000H.: 66,6...67,5

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/

1000H.: 13,0...17,0

Dispersion cm3/: 3,5

Full-load speed regulation:

Speed 1/min: 1500 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 37,0...43,0

Start:

Speed 1/min: 100 Del.quantity : - mind cm3/1000H.: 75.0

Load-dependent start of delivery:

Speed 1/min: 1200 Charge press. hPa: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900 Charge press. hPa: 1000 TD travel mm: 0,7...1,5 mm: (0,4...1,8)

2nd speed 1/min: 1200 Charge press. hPa: 1000

mm: 3,0...3,4 mm: (2,5...3,9) TD travel Del.quantity cm3/: 103,5...104,5 1000H.: (101,0...107,0) 1/min: 1350 1/min: 800 3rd speed 6th speed Charge press. hPa: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 98.5...101.5 1000H.: (97.0...103.0) 7th speed 1/min: 500 TD travel mm: 3,6...4,4 trim: (3,3...4,7)Charge press. hPa: 500
Del.quantity cm3/: 81.0...82.0
1000H.: (78,5...84,5)
8th speed 1/min: 500 Supply-pump pressure characteristic: 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump Charge press. hPa: pressure bar: 5,0...5,6 Del.quantity cm3/: 66,5...67,5 1/min: 900 2nd speed 1000H: (64,0...70,0) Charge press. hPa: 1000 Supply-pump Zero delivery (stop): bar: 6,6...7,2 pressure 3rd speed 1/min: 1200 Mech. shutoff: Charge press. hPa: 1000 Supply-pump Speed 1/min: 1350 bar: 7,7...8,3 1/min: 1350 pressure Del.quantity cm3/: 0..3 1000H.: -4th speed Charge press. hPa: 1000 Supply-pump Electr. shutoff: pressure bar: 8,3...8,9 1/min: 400 Speed Overflow quantity at overflow valve: ELAB volt: -Del.quantity cm3/: 0,0...3,9 max. 1000H.: -1/min: 500 1st speed Charge press. hPa: 1000 Oveflow : 41...83 Idle delivery: quantity cm3/10s: (26...98) 2nd speed 1/min: 1350 1/min: 350 1st speed Del.quantity cm3/: 13.0..17.0 1000H.: (10,0..20,0) Charge press. hPa: 1000 Over flow : 55...138 quantity cm3/10s: (40...153) 2nd speed 1/min: 450 Del.quantity cm3/: 0,0...5,0 1000H.: -Delivery-quant. and breakaway char.: 1/min: 500\* 1st speed Automatic starting fuel delivery: Charge-air pressure-setting point hPa: 500 1/min: 150 1st speed mm: 4,8 LDA stroke Del.quantity cm3/: -Del.quantity cm3/: 81\_0...82\_0 1000H: 85,0 ind. 1000H.: (78,5...84,5) %/min: 1600 1/min: 300 2nd speed 2nd speed Charge press. hPa: 1000
Del.quantity cm3/: 0,0...3,0
1000H.: -Del.quantity cm3/: -1000H: 60,0 3rd speed 1/min: 1500 Shutoff electromagnet: Charge press. hPa: 1000 Del.quantity cm3/: 37,0...43,0 Cut-in 1000H.: (34,0...46,0) : 10,0 min. voltage 1/min: 1350 4th speed Rated voltage : 12,0 Charge press. hPa: 1000 Del.quantity cm3/: 99,0...102,0 Mounting and assembly dimensions: 1000H.: (97,5...103,5) 1/min: 1200 5th speed Designation Charge press. hPa: 1000 mm : -KF mm : 5,0...5,4

MS mm : SVS max. mm : -

\* Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : FIA 5,5 R1 : 19.07.89 Edition : 18.01.89 replaces Calibrating oil : ISO 4113

: VE 6/12F1350 R329-1 Injection pump

: 0 460 426 120 Type number

Customer-specific information : IVECO-FIAT

: 8060.25.221 Engine

Power k: 91

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer: 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

pressure bar: 172...175

Perforated-plate

mm: 0.6 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 tom: 840 x Length

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value mm: 3,0...3,4

Supply-pump pressure:

**BO4** 

Speed 1/min: 1200 Charge press. hPa: 1900 Setting value bar: 7,7...8,3

Full-load del. with charge press.:

1/min: 1200 Speed Charge press. hPa: 1000 Del.quantity cm3/

1000H.: 96,0...97,0

cm3/:5,0Dispersion 1000H: -

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/ 1000H.: 66,6...67,5

Low-idle speed regulation:

1/min: 350 Speed Charge press. hPa: -Del.quantity cm3/

1000H.: 13,0...17,0 cm3/: 3,5

Dispersion 1000H.: -

Full-load speed regulation:

Speed 1/min: 1500 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 37,0...43,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000Ha: 75\_0

Load-dependent start of delivery:

1/min: 1200 Speed Charge press. hPa: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900 Charge press. hPa: 1000 TD travel mm: 0,7...1,5 mm: (0,4...1,8)

1/min: 1200 2nd speed

Charge press. hPa: 1000

mm: 3,0...3,4 mm: (2,5...3,9) 1/min: 1350 Del.quantity cm3/: 96,0...97,0 1000H.: (93,5...99,5) TD travel 3rd speed 1/min: 800 6th speed Charge press. hPa: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 90.5...93.5 1000H.: (89.0...95.0) TD travel mm: 3,6...4,4 mm: (3,3...4,7)1/min: 500 7th speed Supply-pump pressure characteristic: Charge press. hPa: 500 Del.quantity cm3/: 81.0...82.0 1000H.: (78.5...84.5) 8th speed 1/min: 500 1/min: 500 1st speed Charge press. hPa: 1000 Supply-pump Charge press. hPa: bar: 5.0...5.6 1/min: 900 Del.quantity cm3/: 66.5...67.5 1000H: (64.0...70.0) pressure 2nd speed Charge press. hPa: 1000 Supply-pump Zero delivery (stop): bar: 6,6...7,2 pressure 3rd speed 1/min: 1200 Mech. shutoff: Charge press. hPa: 1000 Supply-pump 1/min: 1350 Speed bar: 7,7...8,3 1/min: 1350 Del.quantity cm3/: 0..3 1000H.: pressure 4th speed Charge press. hPa: 1000 Supply-pump Electr. shutoff: bar: 8,3...8,9 pressure Speed 1/min: 400 Overflow quantity at overflow valve: ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -1st speed 1/min: 500 max. Charge press. hPa: 1000 Oveflow : 41...83 Idle delivery: quantity cm3/10s: (26...98) 2nd speed 1/min: 1350 1st speed 1/min: 350 Del.quantity cm3/: 13,0..17,0 Charge press. hPa: 1000 Overflow 1000H.: (10,0..20,0) : 55...138 quantity cm3/10s: (40...153) 1/min: 450 2nd speed Del.quantity cm3/: 0,0...5,0 1000H.: -Delivery-quant. and breakaway char.: 1/min: 500\* Automatic starting fuel delivery: 1st speed Charge-air pressure-setting point hPa: 500 LDA stroke mm: 3.0 Del.quantity cm3/: 81.0...82.0 1000H.: (78.5...84.5) 1st speed 1/min: 150 Del.quantity cm3/: -1000H: 85,0 ind. 1/min: 1600 2nd speed 2nd speed 1/min: 250 Charge press. hPa: 1000 Del.quantity cm3/: - max. 1000H: 60,0 Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1500 3rd speed Shutoff electromagnet: Charge press. hPa: 1000
Del.quantity cm3/: 37,0...43,0
1000H.: (34,0...46,0)
4th speed 1/min: 1350 Cut-in : 10,0 min. voltage Rated voltage : 12,0 Charge press. hPa: 1000 Del.quantity cm3/: 92,5...95,5 Mounting and assembly dimensions: 1000H.: (91,0...97,0) 1/min: 1200 Sth speed Designation Charge press. hPa: 1000 mm : -KF mm : 5.0...5.4

MS mm : mm : -

\* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 5,9 U43 Test sheet Edition : 11.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R173-12

: 0 460 426 126 Type number

Customer-specific information

Customer : CDC

: 6 BTA- 590 IND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm:0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0\_02(0\_04)

Start of delivery block Piston stroke mm: 1\_85

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000

**B07** 

Setting value mm: 1.3...1.7

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3.2...3.8

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 83.0...84.0

cm3/: 4.0Dispersion 1000H : (4.5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 67.5...68.5

cm3/: 9.0 Dispersion 1000H.: -

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 9.0...13.0

cm3/: 5.5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1150 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 60.0...66.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 80.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0.4...1.2

mm: (0.1...1.5)

2nd speed 1/min: 750 Charge press. hPa: 1000 mm: 1.3...1.7 TD travel

mm: (0.8...2.2)

3rd speed 1/min: 1100	Deliquantity cm3/: 79.582.5
Charge press. hPa: 1000	1 1000H.: (78.084.0)
TD travel mm: 2.23.0	1 8th speed 1/min: 750
mm: (1.93.3)	Charge press. hPa: 1000
	<pre>Del.quantity cm3/: 83.084.0</pre>
Supply-pump pressure characteristic:	1 1000H: (80.586.5)
	1 9th speed 1/min: 500
1st speed  1/min: 600	Charge press. hPa: 1000
Charge press. hPa: 1000	Del.quantity cm3/: 79.087.0
Supply-pump	1 1000H: -
pressure bar: 2.63,2	1 10th speed 1/min: 500
2nd speed 1/min: 750	Charge press. hPa: -
Charge press. hPa: 1000	Del.quantity cm3/: 67.568.5
Supply-pump	1 1000H: (63.572.5)
pressure bar: 3.23.8	100011. (05.5(2.5)
3rd speed 1/min: 1100	l Zono dolivony (oten):
Change proce block 1000	Zero delivery (stop):
Charge press. hPa: 1000	l dinah ahadada
Supply-pump [	Mech. shutoff:
pressure bar: 4.75.3	
	Speed 1/min: 1100
Overflow quantity at overflow valve:	Del.quantity cm3/: 03
	1 1000H.: ~
1st speed	
Oveflow : 4148	! Electr. shutoff:
quantity cm3/10s: (2698)	
2nd speed 1/min: 1100 i	l Speed 1/min: 375
Charge press. hPa: 1000	I ELAB volt: -
Overflow : 55138	
quantity cm3/10s: (40153)	<pre>l Del.quantity cm3/: 0.03.0 l max. 1000H.: -</pre>
1	10001131
Delivery-quant. and breakaway char.:	Idle delivery:
i	1
1st speed 1/min: 700⊁ i	1st speed 1/min: 375
Charge-air pressure-setting	Del quantity cm3/: 9 0 13 0
point hPa: 400	Del.quantity cm3/: 9.013.0 1000H.: (6.016.0
Del.quantity cm3/: 77.578.5	2nd speed 1/min: 500
1000H.: (73.582.5)	Dal grantity and/1 0.0 / 0
2nd speed 1/min: 1260	Del.quantity cm3/: 0.04.0
	i i i i i i i i i i i i i i i i i i i
Charge press. hPa: 1000	i Nytonotin-atantia-fial-delivery
Deliquantity cm3/: 0.03.0	Automatic starting fuel delivery:
1000H.: -	4.4 4.4 200
3rd speed 1/min: 1240	1st speed 1/min: 280
Charge press. hPa: 1000	ind. 1000H: 80.0
Del.quantity cm3/: 0.015.0	
1000H.: -	2nd speed 1/min: 440
4th speed 1/min: 1200	Del.quantity cm3/: -
Charge press. hPa: 1000	max. 1000H : 80.0
Del.quantity cm3/: 15.055.0	
1000H.: -	Shutoff electromagnet:
5th speed 1/min: 1150	
10 4000	Cut-in
Charge press. NYa: 1000	
Charge press. hPa: 1000	min. voltage : 10.0
Del.quantity cm3/: 60.066.0	min. voltage : 10.0 Rated voltage : 12.0
Deliquentity cm3/: 60.066.0   1000H.: (57.069.0)	min. voltage : 10.0 Rated voltage : 12.0
Del.quantity cm3/: 60.066.0   1000H.: (57.069.0)   6th speed	Rated voltage : 12.0
Del.quantity cm3/: 60.066.0   1000H.: (57.069.0)   6th speed	
Del.quantity cm3/: 60.066.0   1000H.: (57.069.0)	Rated voltage : 12.0  Mounting and assembly dimensions:
Del.quantity cm3/: 60.066.0   1000H.: (57.069.0)   15th speed	Rated voltage : 12.0  Mounting and assembly dimensions:  Designation
Del.quantity cm3/: 60.066.0   1000H.: (57.069.0)   1000H.: (57.069.0)   1000H.: (1000   1000H.: (1000   1000H.: (1000H.:	Rated voltage : 12.0  Mounting and assembly dimensions:

SVS max. mm : -

Remarks:

: C.D.C. # 390 4727 \* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: CUM 5,9 U42 Test sheet Edition : 11.07.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R173-12 Injection pump

: 0 460 426 126 Type number

Customer Part-No.: 3 904 545

Customer-specific information

Customer : CDC

: 6 BTA- 590 IND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening.

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,85

mm:  $\leftarrow 0.02(0.06)$ 

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

**B10** 

Charge press. hPa: 1000 Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 3.2...3.8

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 1000

Deliquantity cm3/

1000H.: 83.0...84.0

cm3/: 4.0Dispersion 1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/

1000H.: 67.5...68.5

cm3/: 9.0 Dispersion 1000H .: -

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 9.0...13.0

cm3/: 5.5 1000H.: (7.0) Dispersion

Full-load speed regulation:

1/min: 1150 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 60.0...66.0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 80.0 mind i

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

mm: 0.4...1.2 TD travel

mm: (0.1...1.5) 2nd speed 1/min: 750

Charge press. hPa: 1000

TD travel mm: 1.31.7   mm: (0.82.2)	Charge press. hPa: 1000 Del.quantity cm3/: 80,583,5 1000H.: (79,085,0) 8th speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 83.084.0 1000H: (80.586.5)
Supply-pump pressure characteristic:	9th speed 1/min: 500 Charge press. hPa: 1000
1st speed 1/min: 600   Charge press. hPa: 1000	Del.quantity cm3/: 79.087.0
Simply-nimp	10th speed 1/min: 500 Charge press. hPa: -
pressure bar: 2,63,2   2nd speed 1/min: 750   Charge press. hPa: 1000   Supply-pump	Del.quantity cm3/: 67.568.5 1000H: (63.572.5)
pressure bar: 3.23.8	Zero delivery (stop):
3rd speed 1/min: 1100   Charge press. hPa: 1000	Mech. shutoff:
Supply-pump   pressure bar: 4.75.3	Speed 1/min: 1100 Del.quantity cm3/: 03
Overflow quantity at overflow valve:	1000H.: -
1st speed 1/min: 500	Electr. shutoff:
Oveflow : 4148	Conn.d. 4 (min. 775
quantity cm3/10s: (2698)	Speed 1/min: 375
	ELAB volt: -
Charge press. hPa: 1000	Del.quantity cm3/: 0.03.0
Overflow : 55138   quantity cm3/10s: (40153)	max. 1000H.: -
quarterey clips ros: (40122)	Idle delivery:
Delivery-quant. and breakaway char.:	rute decivery.
The state of the s	1st speed 1/min: 375
1st speed 1/min: 700*	Del.quantity cm3/: 9.013.0
Charge-air pressure-setting	1000H.: (6.016.0
point hPa: 400	2nd speed 1/min: 500
Del.quantity cm3/: 77.578.5	Del.quantity cm3/: 0.04.0
1000H.: (73.582.5)	1000H.: -
2nd speed 1/min: 1260	
Charge press. hPa: 1000	Automatic starting fuel delivery:
Del.quantity cm3/: 0.03.0	,
1000H.: ~	1st speed 1/min: 280
3rd speed 1/min: 1240	ind. 1000H: 80,0
Charge press. hPa: 1000	
Del.quantity cm3/: 0.015.0	2nd speed 1/min: 440
1000H.: -	Del.quantity cm3/: -
4th speed 1/min: 1200	max. 1000H: 80.0
Charge press. hPa: 1000	
Del.quantity_cm3/: 15.055.0	Shutoff electromagnet:
1000H.: -	Out to the
5th speed 1/min: 1150	Cut-in
Charge press. hPa: 1000	min. voltage : 20.0
Del.quantity cm3/: 60.066.0 1000H.: (57.069.0)	Rated voltage : 24.0
6th speed 1/min: 1100   Charge press. hPa: 1000	Mounting and assembly dimensions:
Del. quantity cm3/: 78.581.5	Designation
1000H.: (77,083,0)	K mm:-
7th speed 1/min: 900	KF mm: 5,05,4

MS mm : 1,0...1,4 SVS max. mm : -

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: CUM 5.9 U20 : 11.07.89 Test sheet Edition replaces : 02.02.89 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R225-18

Type number : 0 460 426 129

Customer-specific information

Customer : CDC

Engine : 6BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02 (0,04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet |

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3.4...3.8

Supply-pump pressure:

Speed 1/min: 750 Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

Speed 1/min : 750

Del.quantity cm3/

1000H.: 75.0...76.0

Dispersion cm3/: 4.0 1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375

Del, quantity cm3/

1000H.: 10.0...12.0

cm3/: 5.5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/

1000H: 52.0...58.0

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel mm: 1.4...2.2

mm: (1.1...2.5)

2nd speed 1/min: 750

TD travel mm: 3.4...3.8

mm: (2.9...4.3)

3rd speed 1/min: 1050

mm: 4.6...5.4 mm: (4.3...5.7) TD travel

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.6...3.2 pressure

2nd speed 1/min: 750

Supply-pump

pressure bar: 3.7...4.3

3rd speed 1/min: 1050

**B13** 

Supply-pump bar: 4.9...5.5 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed : 41...83 Oveflow quantity cm3/10s: (26...98) 2nd speed 1/min: 1050 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1200 cm3/: 0.0...3.0 Del.quantity 1000H.: 1/min: 1170 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: -1/min: 1130 3rd speed Del.quantity cm3/: 15.0...55.0 1000H.: -4th speed 1/min: 1100 Del.quantity cm3/: 52.0...58.0 1000H.: (49.0...61.0) 5th speed 1/min: 1050 Del.quantity cm3/: 00.3....73.0) 1/min: 900 6th speed Del.quantity cm3/: 71.5...74.5 1000H.: (69.5...74.5) 1/min: 750 7th speed Del.quantity cm3/: 75.0...76.0 1000H.: (72.5...78.5) 8th speed 1/min: 500 Del.quantity cm3/: 59.5...67.5 1000H: (57.5...69.5) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: 12.0 Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 10.0..12.0 1000H.: (6.0...16.0)

1/min: 450

Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 60.0 ind. 2nd speed 1/min: 240 Del.quantity cm3/: - max. 1000H: 60.0 Shutoff electromagnet: Cut-in min. voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation K THE KF 5.0...5.4 mm MS : 0.8...1.2 min SVS max. min XK mm XL mm Remarks: : C.D.C. # 390 8201

2nd speed

Note inst. in remarks column

: CUM 5,9 U37 Test sheet Edition : 12.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R373 : 0 460 426 142 Type number

Customer-specific information Customer : CUMMINS

Engine : 6 BTA

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,85

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1,3...1,7

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 84,5...85,5

cm3/:4.0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Deliquantity cm3/

1000H.: 68,5...69,5

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Del. quantity cm3/ 1000H.: 8,0...14,0

cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 59,0...65,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

mm: 0.4...1.2 mm: (0.1...1.5) 1/min: 750 TD travel

2nd speed Charge press. hPa: 1000

TD travel mm: 1,3...1,7 mm: (0,8,...2,2)

3rd speed 1/min: 1050

**B15** 

TD travel mm: 2,02,8	1900H.: (78,585,5
mm: (1,73,1)	8th speed 1/min: 750
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Charge press. hPa: 1000
Supply-pump pressure characteristic:	Del.quantity cm3/: 84,585,5
oppry party proson o original do corrocio.	1000H: (82,088,0
1st speed 1/min: 500	9th speed 1/min: 700
Charge press. hPa: 1000	Charge press bpa: 400
Supply-pump	Charge press. hPa: 400 Del.quantity cm3/: 77,578,5
pressure bar: 2,22,8	1000H: (74,082,0
2nd speed 1/min: 750	10th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: 1000
Supply-pump	Del. quantity cm3/: 84,092,0
pressire har 32 38	1000H: -
pressure bar: 3,23,8 3rd speed 1/min: 1050	11th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: -
Supp ly-pump	Del. quantity cm3/: 68,569,5
pressure bar: 4,55,1	1000H: (65,073,0
process 5 5 5 7 7 5 7 1	100011. (05,011115,0
Overflow quantity at overflow valve:	Zero delivery (stop):
1st speed 1/min: 500	Mech. shutoff:
Charge press. hPa: -	
Oveflow : 4183	Speed 1/min: 1250
quantity cm3/10s: (2698)	Del.quantity cm3/: 03
2nd speed 1/min: 1250	1000H.: -
Charge press. hPa: 1000	
Overflow : 55138	Electr. shutoff:
quantity cm3/10s: (40153)	
	Speed 1/min: 375
Delivery-quant. and breakaway char.:	ELAB volt: -
	Del.quantity cm3/: 0,03,0
1st speed	max. 1000H.: -
Charge-air pressure-setting	
point hPa: 400	Idle delivery:
LDA stroke mm: 5,0	•
Del.quantity cm3/: 77,578,5	1st speed 1/min: 375
1000H.: (74,082,0)	
2nd speed 1/min: 1400	Del.quantity cm3/: 8,014,0 1000H.: (6,016,0)
Charge press. hPa: 1000	2nd speed 1/min: 500
Del.quantity cm3/: 0,03,0	Del.quantity cm3/: 0,04,0
1000H.: -	1000H.: -
3rd speed 1/min: 1370	
Charge press. hPa: 1000	Automatic starting fuel delivery:
Del.quantity cm3/: 0,015,0	
1000H.: -	1st speed 1/min: 250
4th speed 1/min: 1330	Charge press. hPa: -
Charge press. hPa: 1000	Del.quantity cm3/: -
Del.quantity cm3/: 15,055,0	ind. 1000H: 70,0
1000H.: -	
5th speed 1/min: 1300	2nd speed 1/min: 450
Charge press. hPa: 1000	Charge press. hPa: -
Del.quantity cm3/: 59,065,0	Del.quantity cm3/: -
1000H.: (56,068,0)	max. 1000H: 88,0
6th speed 1/min: 1250	
Charge press. hPa: 1000	Shutoff electromagnet:
Del.quantity cm3/: 76,079,0	-
1000H.: (74,580,5)	Cut-in
7th speed 1/min: 1050	min. voltage : 10,0
Charge press. hPa: 1000	Rated voltage : 12,0
	•

# Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0..5,4
MS mm : 1,0..1,4
SVS max. mm : 2,0
XK mm : 21,8..23,8
XL mm : 13,8..17,2

Remarks:

: C.D.C. # 391 7002

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

: REN 2,0 P Test sheet : 18.07.89 Edition replaces : 10.03.89 Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2300 R317 Type number : 0 460 484 020

Customer-specific information Customer : RNUR

Engine : F8Q-A06

TEST BENCH REQUIREMENTS

Calibrating-oil CC return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length

Start of delivery Prestroke min : -(from BDC): -

Indicator setting:

Piston stroke mm: 1.0 **Outlet** : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 4,1...4,5 KSB solenoid-operated valve volt: -

Supply-pump pressure:

**B18** 

Speed 1/min: 1250 Setting value bar: 4,5...5,1 KSB solenoid-operated valve volt: -

Full-load del. w/out charge press.:

Speed 1/min : 1250 Del.quantity cm3/ 1000H.: 31,6...32,6

KSB solenoid-operated volt: valve cm3/: 2,5 Dispersion 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 410 Del.quantity cm3/ 1000H.: 6,5...10.5

KSB solenoid-operated valve volt: cm3/: 2,5 1000H.: (3,0) Dispersion

Residual-Delivery Setting Speed 1/min: 500

Del.quantity cm3/

1000H.: 1,0...5,0

KSB-Solenoid-Operated Volt : valve

Full-load speed regulation:

1/min: 2450 Speed

Deliquantity cm3/

1000H: 23,0...29,0

KSB solenoid-operated valve volt: -

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 40.0 KSB solenoid-operated volt: valve

Load-dependent start of delivery:

1/min: 1250 KSB solenoid-operated valve volt:

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 310 TD travel mm: 0,63,0 mm: -	Overflow : 55138 quantity cm3/10s: (40153)
KSB solenoid-operated	Delivery-quant. and breakaway char.:
2nd speed 1/min: 500 TD travel mm: 1,94,3	1 1st speed 1/min: 2950 1 KSB solenoid-operated 1 valve volt: -
KSB solenoid-operated	Del.quantity cm3/: 0.05.0 1 1000H.: (0.05.0)
3rd speed 1/min: 750 TD travel mm: 1,92,7	l 2nd speed 1/min: 2650 l KSB solenoid-operated
mm: (1,63,0)  KSB solenoid-operated valve volt: -	valve volt: - Del.quantity cm3/: 7.015.0 1 1000H.: (6.016.0)
4th speed 1/min: 1250 TD travel mm: 4.14.5 mm: (3,65,0)	3rd speed 1/min: 2450 KSB solenoid-operated valve volt: -
KSB solenoid-operated valve volt: -	Del.quantity cm3/: 23,029,0 1 1000H.: (22,030,0)
5th speed 1/min: 2000 TD travel mm: 7,48,2 mm: (7,18,5)	1 4th speed 1/min: 2250 1 KSB solenoid-operated 1 valve volt: -
KSB solenoid-operated valve volt: -	Del.quantity cm3/: 31,233,2 1 1000H.: (29,934,5)
6th speed 1/min: 2250 TD travel mm: 7,88,6 mm: -	Sth speed 1/min: 2000 KSB solenoid-operated valve volt: -
KSB solenoid-operated valve volt: -	Del.quantity cm3/: 30,632,6 1 1000H.: (29,333,9)
Supply-pump pressure characteristic:	<pre>6th speed 1/min: 1625 KSB solenoid-operated valve volt: -</pre>
1st speed 1/min: 750 Supply-pump	Del.quantity cm3/: 30,033,0 1 1000H.: (29,233,8)
pressure bar: 3,13,7 KSB solenoid-operated valve volt: -	/th speed 1/min: 1250   KSB solenoid-operated
2nd speed 1/min: 1250 Supply-pump	Del.quantity cm3/: 31,632,6 1 1000H.: (29,834,4)
pressure bar: 4,55,1 KSB solenoid-operated valve volt: -	<pre>1 8th speed 1/min: 750 1 KSB solenoid-operated 1 valve volt: -</pre>
3rd speed 1/min: 2250 Supply-pump	Del.quantity cm3/: 30.333.3 1000H: (29.534.1)
pressure bar: 7,07,6 KSB solenoid-operated valve volt: -	Zero delivery (stop):
Overflow quantity at overflow valve:	Electr. shutoff:
1st speed 1/min: 750 KSB solenoid-operated valve volt: - Oveflow : 4183 quantity cm3/10s: (2698)	Speed 1/min: 400   ELAB volt: -   Del.quantity cm3/: 0,03,0   max. 1000H.: -
2nd speed 1/min: 2250 KSB solenoid-operated	I Idle delivery:
valve volt: -	l 1st speed 1/min: 410

KSB solenoid-operated valve volt: -

Del.quantity cm3/: 6.5...10.5 1000H.: (4,5...12,5)

## High Idle:

Speed 1/min: 500 Del.quantity cm3/: 7.0...11.0 1000H.: (5.0...13.0)

KSB-Solenod-operated Volt: alve

### Automatic starting fuel delivery:

1st speed 1/min: 210 KSB solenoid-operated valve volt: -Del.quantity cm3/: ind. 1000H: 45,0

2nd speed 1/min: 310 KSB solenoid-operated valve volt: Del.quantity cm3/: max. 1000H: 45,0

## Shutoff electromagnet:

Cut-in

min. voltage 0ر10 : Rated voltage : 12,0

## Mounting and assembly dimensions:

Designation

: 3,2...3,4 : 5,3...5,7 (TETT) KF mm mm : 1,1...1,5 mm : 2,7 mm : 18,7...20,7 MS SVS max. ХK ХL mm : 11,2...14,6

Remarks:

Note inst. in remarks column

: REN 2.0 P1 : 17.07.89 Test sheet Edition replaces : 09.05.89 Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2300 R317-2

: 0 460 484 030 Type number

Customer-specific information

Customer : RNUR

Engine : F8Q-706

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

: 40...48 with thermometer electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening.

pressure bar: 130...133

Test in i. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 4,1...4,5 KSB solenoid-operated

valve volt: -

Supply-pump pressure:

1/min: 1250 Setting value bar: 4,5...5,1 KSB solenoid-operated valve volt: -

Full-load del. w/out charge press.:

1/min : 1250 Speed

Del.quantity cm3/

1000H.: 31,6...32,6

KSB solenoid-operated valve volt: cm3/: 2,5 Dispersion 1000H.: (3,0)

Low-idle speed regulation:

1/min: 410 Speed

Del.quantity cm3/ 1000H.: 6,5...10,5

KSB solenoid-operated volt: valve cm3/: 2,5 1000H.: (3,0) Dispersion

Residual-Delivery Setting Speed 1/min: 500 Charge press. hPa: -

Deliquantity cm3/

1000H.: 1,0...5,0

Full-coad speed regulation:

1/min: 2450 Speed

Del.quantity cm3/

1000H: 23\_0...29\_0

KSB solenoid-operated valve volt: -

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 40.0 KSB solenoid-operated valve volt: -

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 310 1st speed

TD travel mm: 0,6...3,0

mm: -

KSB solenoid-operated volt: 12.0 valve 1/min: 500 2nd speed

ID travel mm: 1,94,3	KSB solenoid-operated
mm: -	valve volt: -
KSB solenoid-operated	Del.quantity cm3/: 0,05,0
valve volt: 12,0	1000н.: -
3rd speed 1/min: 750	1 2nd speed 1/min: 2650
TD travel mm: 1,92,7	I KSB solenoid-operated
mm: (1,6,.,3,0)	l valve volt: -
KSB solenoid-operated	<pre>1 Del.quantity cm3/: 7,015,0</pre>
valve volt: -	1000H.: (6,016,0)
4th speed 1/min: 1250	1 3rd speed 1/min: 2450
TD travel mm: 4,14,5	KSB solenoid-operated
mm: (3,65,0)	I valve volt: -
KSB solenoid-operated	Del.quantity cm3/: 23,029,0
valve volt: -	1 1000H.: (22,030,0)
5th speed 1/min: 2000	
TD travel mm: 7,48,2	KSB solenoid-operated
mm: (7,18,5)	valve volt: -
KSB solenoid-operated	Del.quantity cm3/: 31,233,2
valve volt: -	1 1000H.: (29,934,5)
6th speed 1/min: 2250	1 5th speed 1/min: 2000
TD travel mm: 7,88,6	I KSB solenoid-operated
mm: —	! valve volt: -
KSB solenoid-operated	l Del.quantity cm3/: 30,632,6
valve volt: -	1 1000H.: (29,333,9)
	1 6th speed 1/min: 1625
Supply-pump pressure characteristic:	KSB solenoid-operated
oppry part property one accordence.	l valve volt: -
1st speed 1/min: 750	1 Dol mintity on 7/1 70 0 77 0
	Del.quantity cm3/: 30,033,0
Supply-pump	1000H.: (29,233,8)
pressure bar: 3,13,7	7th speed 1/min: 1250
KSB solenoid-operated	KSB solenoid-operated
valve volt: -	valve volt: -
2nd speed 1/min: 1250	Del.quantity cm3/: 31,632,6
Supp ty-pump	1 1000H.: (29,834,4)
pressure bar: 4,55,1	8th speed 1/min: 750
KSB solenoid-operated	KSB solenoid-operated
valve volt: -	valve volt: -
3rd speed 1/min: 2250	Del.quantity cm3/: 30,333,3
Supply-pump	1 1000H: (29,534,1)
	۱ م ۲۰ د د درم د ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱ ۱
	1 Zone delivente (etce):
KSB solenoid-operated	Zero delivery (stop):
valve volt: -	
Overflow quantity at overflow valve:	Electr. shutoff:
1st speed 1/min: 750	l Speed 1/min: 400
KSB solenoid-operated	I ELAB volt: -
valve volt: -	Del.quantity cm3/: 0,03,0
Oveflow : 4183	I max. 1000H.: -
quantity cm3/10s: (2698)	
2nd speed 1/min: 2250	Idle delivery:
	i late detivery.
KSB solenoid-operated	for many 4 /min /40
valve volt: -	1 1st speed 1/min: 410
Over flow : 55138	KSB solenoid-operated
quantity cm3/10s: (40153)	valve volt: -
	Del.quantity cm3/: 6,510,5
Delivery-quant. and breakaway char.:	(5ر 12 5ر 4) :
1st speed 1/min: 2950	l High Idle:

Speed 1/min: 500 Del.quantity cm3/: 7.0...11.0 1000H.: (5,0...13.0)

KSB-Solenod-operated alve Volt: -

#### Residual:

Speed 1/min: 500 Del.quantity : 1,0...5,0 1000H.: -

# Automatic starting fuel delivery:

1st speed 1/min: 210 KSB solenoid-operated valve volt: -Del.quantity cm3/: -1000H: 45,0 ind.

2nd speed 1/min: 310 KSB solenoid-operated valve volt: Del.quantity cm3/: max. 1000H: 45,0

## Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

## Mounting and assembly dimensions:

Designation

mm : 3,2...3,4 mm : 5,3...5,7 mm : 1,1...1,5 mm : 2,7 mm : 18,7...20,7 K KF MS SWS max. XK mm: 11,2...14,6 XL

Remarks:

Note inst. in remarks column

Test sheet : VWW 2,4 S6 : 18.07.89 Edition : 03.02.89 replaces Calibrating oil : ISO 4113

Injection pump : VE 5/ 8F2200 L336
Type number : 0.460 485 001 : 0 460 485 001 Type number

Customer-specific information

Customer

Engine : 153-2.4L

Power k: 60.0 Speed 1/mi: 4400

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke वाका : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 2.7...3.1 KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

Speed 1/min: 1250 Setting value bar: 5.7...6.3

KSB solenoid-operated valve volt: 12.0

Full-load del. w/out change press.:

1/min : 3256 Speed

Del.quantity cm3/ 1000H.: 34.0...35.0

KSB solenoid-operated volt: 12.0 cm3/: 2.0 Dispersion 1000H .: -

Low-idle speed regulation:

1/min: 415

Del.quantity cm3/ 1000H.: 7.0...9.0

KSB solenoid-operated volt: 12.0 valve cm3/: 2.0 Dispersion 1000H.: (3.0)

Residual-Delivery Setting Speed 1/min: 540

Del.quantity cm3/

1000H.: 2.0...3.9

KSB-Sulenoid-Operated valve Volt : 12.0

Full-load speed regulation:

Speed 1/min: 2525

Del.quantity cm3/

1000H: 10.0...14.0

KSB solenoid-operated valve volt: 12.0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 35.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500\*

mm: 2.3...2.7 TD travel

mm: (1.5...3.5)

KSB solenoid-operated volt: -1/min: 750 valve 2nd speed TD travel

mm: 0.6...1.4 mm: (0.3...1.7)

KSB solenoid-operated	Del.quantity cm3/: 10.014.0
valve volt: 12.0	10004.: (8.016.0)
3rd speed 1/min: 1250	3rd speed 1/min: 2425
TD travel mm: 2.73.1	KSB solenoid-operated
mm: (2.23.6)	valve volt: 12.0
KSB solenoid-operated	Del.quantity cm3/: 18.028.0
valve volt: 12.0	1000H.: (17.029.0)
4th speed 1/min: 2000	4th speed 1/min: 2200
TD travel mm: 5.96.7	KSB solenoid-operated
mm: (5.67.0)	valve volt: 12.0
KSB solenoid-operated	Del.quantity cm3/: 28.230.2
valve volt: 12.0	1000H.: (27.031.4)
Vacet 4000. 12.0	Sth speed 1/min: 1250
Simply-nime pressing characteristics	VCB colonoid-conneted
Supply-pump pressure characteristic:	KSB solenoid-operated
tot opend 1 (vin : EDO	valve volt: 12.0
1st speed 1/min: 500	Del.quantity cm3/: 34.035.0 1000H.: (32.236.7)
Supply-pump !	1000H.: (32.236.7)
pressure bar: 5.16.3	6th speed 1/min: 750
KSB solenoid-operated	KSB solenoid-operated
valve volt: -	valve volt: 12.0
2nd speed 1/min: 750	Del.quantity cm3/: 29,732.7
Supply-pump 1	1000H.: (28.234.2)
pressure bar: 4.65.2	7th speed 1/min: 500
KSB solenoid-operated	KSB solenoid-operated
valve volt: 12.0	valve volt: 12.0
3rd speed 1/min: 1250	Del.quantity cm3/: 28.533.5
Supply-pump 1	1000H.: (26.036.0)
pressure bar: 5,76,3	, , , , , , , , , , , , , , , , , , , ,
KSB solenoid-operated	Zero delivery (stop):
valve val+: 12 0	zero de creer y la copy.
valve volt: 12.0	
4th speed 1/min: 2200	Cloate chutoff.
4th speed 1/min: 2200   Supply-pump	Electr. shutoff:
4th speed 1/min: 2200   Supply-pump   pressure bar: 7.78.3	
4th speed 1/min: 2200   Supply-pump   pressure   bar: 7.78.3   bar: (7.58.5)	Speed 1/min: 415
4th speed 1/min: 2200   Supply-pump   pressure bar: 7.78.3   bar: (7.58.5)   KSB solenoid-operated	Speed 1/min: 415 ELAB volt: -
4th speed 1/min: 2200   Supply-pump   pressure   bar: 7.78.3   bar: (7.58.5)	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0
4th speed 1/min: 2200   Supply-pump   Pressure bar: 7.78.3   Bar: (7.58.5)   KSB solenoid-operated valve volt: 12.0	Speed 1/min: 415 ELAB volt: -
4th speed 1/min: 2200   Supply-pump   pressure bar: 7.78.3   bar: (7.58.5)   KSB solenoid-operated	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
4th speed 1/min: 2200 Supply-pump	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0
4th speed 1/min: 2200 Supply-pump   pressure bar: 7.78.3   bar: (7.58.5) KSB solenoid-operated   valve volt: 12.0     Overflow quantity at overflow valve:     1st speed 1/min: 750	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
4th speed 1/min: 2200  Supply-pump	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
4th speed 1/min: 2200 Supply-pump   pressure bar: 7.78.3   bar: (7.58.5) KSB solenoid-operated   valve volt: 12.0     Overflow quantity at overflow valve:     1st speed 1/min: 750     KSB solenoid-operated   valve volt: 12.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery: 1st speed 1/min: 415
4th speed 1/min: 2200 Supply-pump   pressure bar: 7.78.3   bar: (7.58.5) KSB solenoid-operated   valve volt: 12.0     Overflow quantity at overflow valve:     1st speed 1/min: 750     KSB solenoid-operated   valve volt: 12.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0  Overflow : 4183	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Overflow : 4183 quantity cm3/10s: (2698)	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7,09,0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012.0)
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated KSB solenoid-operated	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Overflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012,0) 2nd speed 1/min: 365 KSB solenoid-operated
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012,0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Overflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012,0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012,0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12,020,0)
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2700	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)  Residual:
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2700  KSB solenoid-operated  KSB solenoid-operated	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)  Residual:  Speed 1/min: 490
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2700  KSB solenoid-operated valve volt: 12.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)  Residual:  Speed 1/min: 490 Del.quantity : 2.54.5
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 2700  KSB solenoid-operated valve volt: 12.0  Delivery-quantity cm3/: 0.06.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012,0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12,020,0)  Residual:  Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0)
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 2700  KSB solenoid-operated valve volt: 12.0  Delivery-quant. 2700  Ist speed 1/min: 2700  CSB solenoid-operated valve volt: 12.0  Deliquantity cm3/: 0.06.0	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)  Residual:  Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0) KSB-Solenoid-operated
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2700  KSB solenoid-operated valve volt: 12.0  Delivery-quant. and breakaway char.:  2nd speed 1/min: 2525	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4,012,0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12,020,0)  Residual:  Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0)
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2700  KSB solenoid-operated valve volt: 12.0  Delivery-quant. on one of the composition of the	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)  Residual:  Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0) KSB-Solenoid-operated
Ath speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)  KSB solenoid-operated valve volt: 12.0  Overflow quantity at overflow valve:  1st speed 1/min: 750  KSB solenoid-operated valve volt: 12.0  Oveflow : 4183 quantity cm3/10s: (2698)  2nd speed 1/min: 2200  KSB solenoid-operated valve volt: 12.0  Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2700  KSB solenoid-operated valve volt: 12.0  Delivery-quant. and breakaway char.:  2nd speed 1/min: 2525	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) 2nd speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)  Residual:  Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0) KSB-Solenoid-operated

1/min: 180 1st speed KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: ind. 1000H: 35.0

2nd speed 1/min: 380 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: - max. 1000H: 40.0

## Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

## Mounting and assembly dimensions:

Designation

: 3.1...3.5 K KF mm : K-QT MS mm : 1.2...1.6

SVS max. mm : -

Remarks:

Note inst. in remarks column

Test sheet : VWW 2,4 S7 : 19.07.89 Edition replaces : 11.05.89 Calibrating oil : ISO 4113

Injection pump : VE 5/ 8F2100 L358 : 0 460 485 003 Type number

Customer-specific information

Customer

Engine : 153-2,4L.T4

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 2,8...3,2

Supply-pump pressure:

1/min: 1250 Setting value bar: 5,7...6,3

Full-load del. w/out charge press.:

Speed 1/min : 1250

Del.quantity cm3/

1000H.: 36,0...37,0

Dispersion cm3/: 2.01000H.: -

Low-idle speed regulation:

1/min: 415 Speed

Deliquantity cm3/

1000H.: 7,0...9,0 cm3/: 2,0

Dispersion 1000H.:

Residual-Delivery Setting Speed 1/min: 540

Del.quantity cm3/

1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2400

Deliquantity cm3/

1000H: 10,0...14,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 35,0 mind

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel mm: 0.6...1.4mm: (0.3...1.7)

2nd speed 1/min: 1250

mm: 2,8...3,2 TD travel

mm: (2,3...3,7)

1/min: 1700 3rd speed

TD travel mm: 5,1...59

mm: (4,8...6,2)1/min: 2100 4th speed

mm: 5,3...6,1 mm: (5,0...6,4) TD travel

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 4,2...4,8 pressure

2nd speed 1/min: 1250

Supply-pump bar: 5,7...6,3 pressure 3rd speed 1/min: 2100 Supply-pump pressure bar: 7,7...8,3 Overflow quantity at overflow valve: 1st speed 1/min: 600 Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 2100 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2600 1st speed cm3/: 0,0...6,0 Del.quantity 1000H.: -2nd speed 1/min: 2400 cm3/: 10,0...14,0 Del.quantity 1000H.: (8,0...16,0) 3rd speed 1/min: 2300 Del.quantity cm3/: 17,0...27,0 1000H.: (16,0...28,0) 4th speed 1/min: 2100 Del.quantity cm3/: 30,5...32,5 1000H.: (29,3...33,7)

5th speed 1/min: 1250
Del.quantity cm3/: 36,0...37,0
1000H.: (34,3...38,7)
6th speed 1/min: 600
Del.quantity cm3/: 31,0...34,0
1000H.: (29,5...35,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1st speed 1/min: 415 Del.quantity cm3/: 7,0...9,0 1000H.: (4,0...12,0)

Residual:

Speed 1/min: 490 Del.quantity : 2,3...4,3 1000H.: (0,8...5,8)

Automatic starting fuel delivery:

1st speed 1/min: 180 Del.quantity cm3/: ind. 1000H: 35,0

2nd speed 1/min: 380 Del.quantity cm3/: max. 1000H: 37,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4 KF mm : K-0T MS mm : 1,2...1,6 SVS max. mm : 2,4

Remarks:

Note inst. in remarks column

: FOR 1.6 A2 : 17.07.89 Test sheet Edition replaces : 19.12.88 Calibrating oil : ISO 4113

: VE 4/ 9F2400 R125-2 Injection pump

: 0 460 494 186 Type number

Customer-specific information

Customer : FORD

Engine : 1.6 L. IDI

TEST BENCH REQUIREMENTS

Calibrating-oil OC

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Setting value nm: 4,3...4,7 KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

1/min: 1500 Setting value bar: 5,3...5,9 KSB solenoid-operated valve volt: 12.0

Full-load del. w/out charge press.:

Speed 1/min : 1750

Del.quantity cm3/ 1000H.: 28,8...29,8

KSB solenoid-operated volt: 12.0 valve cm3/: 2,5 Dispersion 1000H.: -

Low-idle speed regulation:

1/min: 440 Speed

Del.quantity cm3/ 1000H.: 7,0...11,0

KSB solenoid-operated volt: 12.0 cm3/: 2.0 valve Dispersion 1000H.: -

Full-load speed regulation:

1/min: 2675 Speed

Deliquantity cm3/

1000H: 7,5...13,5

KSB sulenoid-operated valve volt: 12.0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 50.0 KSB solenoid-operated valve volt: 12,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed

mm: 2,2...4,2 TD travel

min : -

KSB solenoid-operated valve volt: -

1/min: 1000 2nd speed TD travel

mm: 1,3...2,1 mm: (1,0...2,4)

KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 1500 TD travel

mm: 4,3...4,7 mm: (3,8...5,2)

KSB solenoid-operated valve volt: 12,0

4th speed 1/min: 2000	<pre>KSB solenoid-operated</pre>
TD travel mm: 6,87,6	I valve volt: 12,0
mm: (6,57,9)	Del.quantity cm3/: 28,829,8
KSB solenoid-operated	1 10000 (27 4 74 E)
valva valte 12.0	1000H.: (27,131,5)
valve volt: 12,0	1 6th speed 1/min: 1000
	KSB solenoid-operated
Supply-pump pressure characteristic:	l valve volt: 12,0
	Del.quantity cm3/: 24,127,1
lst speed 1/min: 600	1 1000H.: (23,427,8)
Supply-pump	1 7th speed 1/min: 600
pressure bar: 3,13,7	1 KSB solenoid-operated
(SB solenoid-operated	I valve volt: 12,0
valve volt: 12,0	Del.quantity cm3/: 23,026,0
2nd speed 1/min: 1500	1 1000H.: (21,527,5)
Supply-pump	1000111. (21,511121,57
pressure bar: 5,35,9	7eno delivery (stools
prossure bar, Jpurajy	Zero delivery (stop):
(SB solenoid-operated	<b>!</b> :
valve volt: 12.0 ord speed 1/min: 2000	[
ora speed 17min: 2000	Electr. shutoff:
Supply-pump	
pressure bar: 6,67,2	Speed 1/min: 440
(SB solenoid-operated	i ELAB volt: -
valve volt: 12,0	Del.quantity cm3/: 0,03,0
	I max. 1000H.: -
Overflow quantity at overflow valve:	
	l Idle delivery:
st speed 1/min: 600	
(SB solenoid-operated	1 1st speed 1/min: 440
valve volt: 12 0	KSB sylenoid-operated
valve volt: 12,0 Oveflow : 4183	
	valve volt: 12,0
quantity cm3/10s: (2698)	Del.quantity cm3/: 7,011,0
2nd speed 1/min: 2400	1000H.: (5,013,0)
(SB solenoid-operated	2nd speed 1/min: 475
valve volt: 12,0 Overflow : 55138	KSB solenoid-operated
verflow : 55138	valve volt: 12,0
quantity cm3/10s: (40153)	Del.quantity cm3/: 2,57,5
	1000H.: (0,59,5)
elivery-quant. and breakaway char.:	I 3rd speed 1/min: 570
1	KSB solenoid-operated
st speed 1/min: 2950	valve volt: 12,0
(SB solenoid-operated	Del.quantity cm3/: 0,03,6
valve volt: 12,0	1000H.: -
el.quantity cm3/: 0,02,0	
1000H.: -	Arrangement of drivers on engine-
Ind speed 1/min: 2650	
	speed lever for exhaust-gas-
SB solencid-operated	recirculation valve linkage (guage)
	4ah araad 4.63- 4400
el.quantity_cm3/: 7,513,5	1st speed 1/min: 1100
1000H.: (6,514,5)	KSB solenoid-operated
rd speed 1/min: 2550	valve volt: 12,0
(SB solenoid-operated	Del.quantity cm3/: 10,611,6
valve volt: 12,0	1000H.: (9,113,1)
el.quantity cm3/: 18,526,5	
1000H.: (17,527,5)	Automatic starting fuel delivery:
th speed 1/min: 2400	3
SB solenoid-operated	1st speed 1/min: 400
valve volt: 12,0	KSB solenoid-operated
el.quantity cm3/: 27,229,2	valve volt: 12,0
1000H.: (26,030,4)	Del.quantity cm3/: -
th speed 1/min: 1750	ind. 1000H: 30,0

2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: max. 1000H: 30,0

### Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

## Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
KF mm : 5,7...6,0
MS mm : 1,6..1,85
SVS max. mm : 3,4

#### Remarks:

Note regarding Swiss version: In the event of "smoke" complaint, turn full-load screw by  $30^{\circ}$  (in a counter-clockwise direction). After correcting full-load delivery, have exhaust-gas-recirculation valve adjusted by Ford Service.

When setting and checking pump on injection-pump test bench, applicable full-load deliveries are 0.5 cm 3 / 1000 strokes less than indicated in test-specification sheet. For adjustment of switching point (EGR vaive), include 12.0 mm spacer at third fuel-delivery stop.

Note inst. in remarks column

: VWW 1,6 X12 Test sheet : 19.07.89 Edition : 10.11.88 replaces Calibrating oil : ISO 4113

: VE 4/ 9F2250 R293 Injection pump Type number : 0 460 494 221

Customer-specific information

Customer

: 086T-1.6L Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147...150 pressure

Test in j. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Charge press. hPa: 750 Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1250 Charge press. hPa: 750 Setting value bar: 4,9...5,5 Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

Del.quantity cm3/ 1000H.: 42.0...43.0 Dispersion cm3/: 2.5 1000H: (3.0)

Full-load del. w/out charge press.:

Speed 1/min : 700 Del.quantity cm3/

1000H.: 26,5...27,5

Low-idle speed regulation:

Speed 1/min: 425 Deliquantity cm3/

1000H.: 9,0...11,0

cm3/: 2,5 1000H.: (3,0) Dispersion

Residual-Delivery Setting

1/min: 550 Speed

Del.quantity cm3/ 1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2525 Charge press. hPa: 750

Del.quantity cm3/

1000H: 13,0...17,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 35,0 mind

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 750

TD travel mm: 1,7...2,5

mm: (1,4...2,8)

2nd speed 1/min: 1250 Charge press. hPa: 750 TD travel mm: 3,0...3,4 mm: (2,5...3,9)

3rd speed 1/min: 2000 Charge press. hPa: 750

mm: 6,4...7,2 mm: (6,1...7,5) 1/min: 2250 Del.quantity cm3/: 42,0...43,0 1000H.: (40,3...44,7) TD travel 4th speed 1/min: 900 7th speed Charge press. hPa: 750 Charge press. hPa: 300 Del.quantity cm3/: 32.5...33.5 1000H.: (30.0...36.0) TD travel mm: 7,0...7,8 mm: (6,7...8,1)1/min: 700 8th speed Charge press. hPa: 750
Del.quantity cm3/: 34,0...37,0
1000H: (32,5...38,5)
9th speed 1/min: 700 Supply-pump pressure characteristic: 1/min: 700 1st speed Charge press. hPa: 750 Supply-pump Charge press. hPa: bar: 3,3...3,9 1/min: 1250 Del.quantity cm3/: 26,5...27,5 pressure 1000H: (24,0...30,0) 2nd speed Charge press. hPa: 750 10th speed 1/min: 600 Supply-pump Charge press. hPa: bar: 4,9...5,5 1/min: 2250 Del.quantity cm3/: 25,0...30,0 pressure 1000H: (22,5...32,5) 3rd speed Charge press. hPa: 750 Supply-pump Zero delivery (stop): bar: 7,7...8,3 pressure Overflow quantity at overflow valve: Electr. shutoff: 1/min: 700 1/min: 425 1st speed Speed Charge press. hPa: -ELAB volt: -Oveflow : 41...63 Del.quantity cm3/: 0,0...3,0 quantity cm3/10s: (26...98) 1000H .: max. 1/min: 2250 2nd speed Charge press. hPa: 750 Overflow : 55.. Idle delivery: : 55...138 quantity cm3/10s: (40...153) 1st speed 1/min: 425 Del.quantity cm3/: 9,0...11,0 Delivery-quant. and breakaway char .: 1000H.: (4,5...15,5) High Idle: 1st speed 1/min: 900\* Charge-air pressure-setting point hPa: 300 Speed 1/min: 525 LDA stroke mm: 5.5 Del.quantity cm3/: 32,5...33,5 Del.quantity cm3/: 9,0...11,0 1000H.: (5,0...15,0) 1000H.: (30,0...36,0) 1/min: 2650 2nd speed Residual: Charge press. hPa: 750
Del.quantity cm3/: 0,0...6,0
1000H.: -1/min: 500 Speed Del.quantity : 2,5...4,5 1/min: 2525 1000H.: (0,0...7,0) 3rd speed Charge press. hPa: 750 Del.quantity cm3/: 13,0...17,0 Automatic starting fuel delivery: 1000H.: (11,0...19,0) 4th speed 1/min: 2425 1st speed 1/min: 150 Charge press. hPa: 750 Del.quantity cm3/: -Del.quantity cm3/: 26,5...36,5 1000H.: (25,5...37,5) 5th speed 1/min: 2250 Charge press. hPa: 750 1000H: 35,0 ind. 2nd speed 1/min: 350 Del.quantity cm3/: -Del.quantity cm3/: 36,3...38,3 1000H.: (35,1...39,5) max. 1000H : 37,0 1/min: 1500 Shutoff electromagnet: 6th speed Charge press. hPa: 750

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : K1 KF mm : -MS mm : 1.1...1.5 SVS max. mm : 3.1

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Adjust damper rate:
Engine speed n = 1000 min -1
Fuel delivery = 11.0...13.0 cm 3 /
1000 strokes
(8.0...16.0) cm 3 /
1000 strokes

Note inst. in remarks column

: FOR 1,6 A3 Test sheet Edition : 17.07.89 replaces : 19.12.88 Calibrating oil : ISO 4113

: VE 4/ 9F2400 R125-3 Injection pump

: 0 460 494 233 Type number

Customer-specific information Customer : FORD/GB

Engine : 1,6 L. IDI

TEST BENCH REQUIREMENTS

Calibrating-oil oC return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Start of delivery Prestroke mm : -(from BDC): -

Indicator setting:

Piston stroke mm: 0.92 **Outlet** : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Setting value mm: 5,7...6,1 KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

1/min: 1500 Speed Setting value bar: 5,3...5,9

KSB solenoid-operated valve volt: 12.0

Full-load del. w/out charge press.:

Speed 1/min : 1750

Del.quantity cm3/ 1000H.: 28,8...29,8

KSB solenoid-operated volt: 12.0 cm3/: 2,5 valve Dispersion 1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 440 Del.quantity cm3/ 1000H.: 7,0...11.0

KSB solenoid-operated volt: 12.0 cm3/: 2.0 valve Dispersion 1000H.: (2,0)

Full-load speed regulation:

Speed 1/min: 2675

Del.quantity cm3/

1000H: 7,5...13,5

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 50,0 KSB solenoid-operated valve volt: 12,0

Load-dependent start of delivery:

1/min: 1100 Speed KSB solenoid-operated valve volt: 12,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600

TD travel mm: 2,8...5,8

mm: -

KSB solenoid-operated volt: 12.0 valve 2nd speed 1/min: 800

Del.quantity cm3/: 18,5...26,5 1000H.: (17,5...29,5) 4th speed 1/min: 2400 TD travel mm: 2,8...3,6 mm: (2,5...3,9)1/min: 1500 3rd speed mm: 5,7...6,1 mm: (5,2...6,6) TD travel KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 27.2...29.2 1000H.: (26.0...30.4) KSB solenoid-operated volt: 12,0 valve 1/min: 2000 4th speed 1/min: 1750 5th speed TD travel mm: 7,5...8,3 KSB solenoid-operated volt: 12,0 mm: (7,2...8,6) valve Del.quantity cm3/: 28.8...29.8 1000H.: (27,1...31,5) KSB solenoid-operated valve volt: 12,0 1/min: 1000 6th speed Supply-pump pressure characteristic: KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 24,1...27,1 1000H.: (23,4...27,8) 1st speed 1/min: 600 Supply-pump pressure bar: 3,1...3,7 7th speed 1/min: 600 KSB solenoid-operated KSB solenoid-operated volt: 12,0 valve volt: 12,0 valve 1/min: 1500 2nd speed Del.quantity cm3/: 23,0...26,0 1000H.: (21,5...27,5) Supply-pump bar: 5,3...5,9 pressure KSB solenoid-operated Zero delivery (stop): volt: 12,0 valve 3rd speed 1/min: 2000 Supply-pump Electr. shutoff: bar: 6,6...7,2 pressure KSB solenoid-operated 1/min: 440 Speed valve volt: 12.0 ELAB volt: -Del.quantity cm3/: 0,0...3,0 Overflow quantity at overflow valve: 1000H.: max. 1st speed 1/min: 600 Idle delivery: KSB solenoid-operated valve volt: 12.0 1/min: 440 1st speed Oveflow : 41...83 KSB solenoid-operated quantity cm3/10s: (26...98) nd speed 1/min: 2400 valve volt: 12.0 Del.quantity cm3/: 7.0...11.0 1000H.: (5.0...13.0) 2nd speed KSB solenoid-operated 1/min: 475 volt: 12,0 valve 2nd speed Overflow : 55...138 KSB solenoid-operated quantity cm3/10s: (40...153) volt: 12,0 Del.quantity cm3/: 2,5...7,5 1000H.: (0,5...9,5) Delivery-quant. and breakaway char.: 1/min: 570 3rd speed 1/min: 2950 KSB solenoid-operated 1st speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 0,0...3,6 1000H.: volt: 12.0 cm3/: 0.0...2.0 valve Del.quantity cm3/: U 1000H.: -2nd speed 1/min: 2675 Arrangement of drivers on engine-KSB solenoid-operated speed lever for exhaust-gasvolt: 12,0 valve recirculation valve linkage (guage) Del.quantity cm3/: 7,5...13,5 1000H.: (6,5...14,5) 1/min: 1100 1st speed 1/min: 2550 3rd speed KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 10.6..11.6 1000H.: (9.1...13.1) KSB solenoid-operated valve volt: 12,0

## Automatic starting fuel delivery:

1st speed 1/min: 400 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: ind. 1000H: 30,0

2nd speed 1/min: 500 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: max. 1000H: 30,0

### Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

### Mounting and assembly dimensions:

Designation

K mm : 3.4...3.6 KF mm : 5.6...6.0 MS nam : 1.5...1.9 SVS max. mm : 3.0

#### Remarks:

Note regarding Swiss version: In the event of "smoke" complaint, turn full-load screw by 30° (in a counter-clockwise direction). After correcting full-load delivery, have exhaust-gas-recirculation valve adjusted by Ford Service.

when setting and checking pump on injection-pump test bench, applicable full-load deliveries are 0.5 cm 3 / 1000 strokes less than indicated in test-specification sheet. For adjustment of switching point (EGR valve), include 12.0 mm spacer at third fuel-delivery stop.

Note inst. in remarks column

Test sheet : FIA 1.7 PS Edition : 19.07.89 replaces : 16.01.89 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R343 : 0 460 494 246 Type number

Customer-specific information Customer : FIAT-AUTO

Engine : M710 DT 19 D

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value mm: 5,5...5,9 KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000

Setting value bar: 5,3...5,9 KSB solenoid-operated

valve volt: 12.0

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 52,0...53,0

KSB solenoid-operated volt: 12,0 valve cm3/ : 2,5 Dispersion 1000H : (2,5)

Full-load del. w/out charge press.:

1/min : 600 Speed

Del.quantity cm3/ 1000H.: 40,0...41,0

KSB solenoid-operated volt: 12,0 valve

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 11,0...15,0

KSB sulenoid-operated valve volt: 12,0 cm3/: 2,5 Dispersion 1000H.: (2,5)

Residual-Delivery Setting Speed 1/min: 700

Del.quantity cm3/

1000H .: 4,0...6,0

KSB-Solenoid-Operated valve Volt : 12.0

Full-load speed regulation:

Speed 1/min: 2300 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 30,0...36,0

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 55.0 mind KSB solenoid-operated valve volt: 12.0

Load-dependent start of delivery:

Speed 1/min: 1500 Charge press. hPa: -

C10

Test specifications in parentheses Charge press. hPa: 1000 KSB solenoid-operated Timing-device characteristic: volt: 12,0 valve : 41...83 Oveflow quantity cm3/10s: (26...98) 2nd speed 1/min: 2100 1st speed 1/min. 500 Charge press. hPa: 1000 TD travel mm: 3,2...4,8 mm: (2,5...5,5) Charge press. hPa: 1000 KSB solenoid-operated volt: 12.0 : 55...138 valve KSB solenoid-operated Overflow valve volt: quantity cm3/10s: (40...153) 1/min: 1000 2nd speed Charge press. hPa: 1000 Delivery-quant. and breakaway char.: mm: 2,5...5,5 TD travel min: -1st speed 1/min: 800\* KSB solenoid-operated Charge-air pressure-setting valve volt: point hPa: 400 1/min: 800 LDA stroke 3rd speed mm: 6,2 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0
Del.quantity cm3/: 43,5...44,5
1000H.: (41,5...46,5)
2nd speed 1/min: 2650 mm: 1,5...2,3 mm: (1,2...2,6) TD travel KSB solenoid-operated volt: 12,0 valve 1/min: 1500 Charge press. hPa: 1000 4th speed Charge press. hPa: 1000 KSB solenoid-operated mm: 5,5...5,9 mm: (5,2...6,2) TD travel valve volt: 12,0 Del.quantity cm3/: 0,0...7,0 1000H.: -KSB solenoid-operated volt: 12.0 1/min: 2100 valve 1/min: 2450 3rd speed Charge press. hPa: 1000 KSB solenoid-operated 5th speed Charge press. hPa: 1000 mm: 8,2...9,0 mm: (7,9...9,3) valve volt: 12,0
Del.quantity cm3/: 12,0...20,0
1000H.: (11,0...21,0)
4th speed 1/min: 2300 TD travel KSB solenoid-operated valve volt: 12,0 Charge press. hPa: 1000 KSB solenoid-operated Supply-pump pressure characteristic: volt: 12,0 valve Del.quantity cm3/: 30,0...36,0 1000H.: (29,0...37,0) 1st speed 1/min: 800 Charge press. hPa: 1000 Supply-pump 1/min: 2100 5th speed pressure bar: 3,2...3,8 Charge press. hPa: 1000 KSB solenoid-operated KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 50,5...53,5 1000H.: (49,5...54,5) volt: 12.0 1/min: 1500 valve 2nd speed Charge press. hPa: 1000 1/min: 1500 Supply-pump 6th speed bar: 5,3...5,9 Charge press. hPa: 1000 pressure KSB solenoid-operated KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 52.0...53.0 1000H.: (50.5...54.5) volt: 12,0 valve 3rd speed 1/min: 2100 Charge press. hPa: 1000 1/min: 800 Supply-pump 7th speed bar: 7,0...7,6 Charge press. hPa: 1000 pressure KSB solenoid-operated KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 55,5...58,5 valve volt: 12,0 1000H .: -Overflow quantity at overflow valve:

1st speed

1/min: 800

Inspection-pump test specifications

8th speed 1/min: 800 Charge press. hPa: 400 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 43,5...44,5 1000H: (41,5...46,5) 1/min: 800 9th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 37.0...39.0 1000H: (35.5...40.5) 1/min: 600 10th speed KSB solenoid-operated valve volt: 12,0 cm3/: 40,0...41,0 Del.quantity 1000H: (38,0...43,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1st speed 1/min: 400 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 11,0..15,0 1000H.: (9,5...16,5)

Residual:

Speed 1/min: 500
Del.quantity : 6,5...9,5
1000H.: KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 220 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: ind. 1000H: 57,0

2nd speed 1/min: 300 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: max. 1000H: 52,5

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

KF mm : 3,2...3,4 KF mm : 5,6...6,0 MS mm : 1,0...1,4

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Adjustment of potentiometer at control Lever

Prerequisite: pump set Speed-control lever in idle position

Apply d.c. voltage 3.5...3.9 V to connection 1 (positive) and connection 3 (ground).

Turn potentiometer until a voltage of 3.07...3.13 V is indicated between connection 2 (positive) and connection 3 (ground).

If potentiometer is set correctly, the voltage must drop to 1.0...1.4 V in max. control lever position.

Note inst. in remarks column

Test sheet : VWW 1,6 X13 Edition : 19.07.89 replaces : 10.05.89 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R328-2 Type number : 0 460 494 252

Type number : 0 460 494 252

Customer-specific information

Customer

Engine : 086 T-1,6L LLK

TEST BENCH REQUIREMENTS

Calibrating-oil oC return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening.

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke min : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Charge press. hPa: 750 Setting value mm: 3,0...3,4

Supply-pump pressure:

1/min: 1250 Speed Charge press. hPa: 750 Setting value bar: 4,9...5,5 Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

Del.quantity cm3/ 1000H.: 42,0...43,0 Dispersion cm3/: 2,5 1000H: (3,0)

Full-load del. w/out charge press.:

1/min : 700 Del.quantity cm3/

1000H.: 26,5...27,5

Low-idle speed regulation:

1/min: 425 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 9,0...11.0 Dispersion cm3/: 2,5 1000H.: (3,0) Residual-Delivery Setting

1/min: 550 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 2,0...3,0

Full-load speed regulation:

1/min: 2525 Speed Charge press. hPa: 750

Del.quantity cm3/

1000H: 13,0...17,0

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity mind cm3/1000H.: 35\_0

Load-dependent start of delivery:

Speed 1/min: 1250 Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed Charge press. hPa: 750 mm: 1,7...2,5 TD travel mm: (1,4...2,8) 2nd speed 1/min: 1250

Charge press. hPa: 750

TD travel mm: 3.03.4 mm: (2.53.9)  3rd speed 1/min: 2000	Del.quantity cm3/: 36,338,3 1 1000H.: (35,139,5)
Charge press. hPa: 750 TD travel mm: 6,47,2 mm: (6,17,5)	6th speed 1/min: 1500   Charge press. hPa: 750   Del.quantity cm3/: 42,043,0   1000H.: (40,344,7)
4th speed 1/min: 2250 Change press. hPa: 750	1 7th speed 1/min: 900 1 Charge press. hPa: 300
TD travel mm: 7.07.8 mm: (6,78,1)	Del.quantity cm3/: 33,034,0 1 1000H.: (30,536,5) 1 8th speed 1/min: 700
Supply-pump pressure characteristic:	<pre>Charge press. hPa: - Del.quantity cm3/: 26,527,5</pre>
1st speed 1/min: 700 Charge press. hPa: 750 Supply-pump	1000H: (24,030,0) 9th speed 1/min: 700 Charge press. hPa: 750
pressure bar: 3,33,9 2nd speed 1/min: 1250	Del.quantity cm3/: 34,037,0 1 1000H: (32,538,5)
Charge press. hPa: 750 Supply-pump pressure bar: 4,95,5	l 10th speed 1/min: 600 l Charge press. hPa: -
3rd speed 1/min: 2250 Charge press. hPa: 750	l Del.quantity cm3/: 25,030,0 l 1000H: (22,532,5)
Supply-pump pressure bar: 7,78,3	<pre>! Zero delivery (stop): !</pre>
Overflow quantity at overflow valve:	Electr. shutoff:
1st speed 1/min: 700 Charge press. hPa: -	Speed 1/min: 425
Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed   1/min: 2250	Del.quantity cm3/: 0,03,0   max. 1000H.: -
Charge press. hPa: 750 Overflow: 55138	Idle delivery:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:	1 st speed 1/min: 425 1 Del.quantity cm3/: 9,011,0 1000H.: (4,515,5)
1st speed 1/min: 900* Charge-air pressure-setting	High Idle:
point hPa: 300 LDA stroke mm: 5.5 Del.quantity cm3/: 33.034.0	Speed 1/min: 525   Del.quantity cm3/: 9.011.0   1000H.: (5.015.0)
1000H.: (30,536,5)  2nd speed 1/min: 2650  Charge press. hPa: 750	Residual:
Del.quantity cm3/: 0,06,0 1000H.: -	Speed 1/min: 500 Del.quantity: 2,54,5
3rd speed 1/min: 2525 Charge press. hPa: 750 Del.quantity cm3/: 13,017,0	1 1000H.: (0,07,0)  1 Automatic starting fuel delivery:
1000H.: (11.019.0) 4th speed 1/min: 2425	1st speed
Charge press. hPa: 750 Del.quantity cm3/: 26,536,5 1000H.: (25,537,5)	l Del.quantity cm3/: - l ind. 1000H: 35,0
Sth speed 1/min: 2250 Charge press. hPa: 750	l 2nd speed 1/min: 350 l Del.quantity cm3/: - l max. 1000H: 37,0

# Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

# Mounting and assembly dimensions:

Designation

K KF mm : K1

KF mm : 5,6...6,0
MS mm : 1,1...1,5
SVS max. mm : -

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test sheet : FIA 1,7 P11 Edition : 19.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 256-2 Type number : 0 460 494 253

Customer Part-No. :

Customer-specific information Customer : FIAT-AUTO

: M705 LA 19.0 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting: Piston stroke mm: 1.0 Cutlet

Injection-pump setting values Test specifications in parentheses

Timi -device travel:

1/min: 1500 Speed Setting value mm: 4,4...4,8

Supply-pump pressure:

Speed 1/min: 1500 Setting value bar: 5,2...5,9

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/

1000H.: 29.5...30,5 cm3/: 2,5

Dispersion 1000H .: -

Low-idle speed regulation:

Speed 1/min: 390

Deliquantity cm3/

1000H.: 10,0...14,0 cm3/: 2,5

Dispersion 1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2500

Deliquantity cm3/

1000H: 18.5...24.5

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 55.0 mind

Load-dependent start of delivery:

1/min: 1500 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

TD travel mm: 1,1...1,9mm: (0,8...2,2)

1/min: 1500 2nd speed

mm: 4.4...4.8 mm: (3,9...5,3) TD travel

1/min: 2000 3rd speed

TD travel mm: 6,6...7,4

mm: (6,2...7,8)

4th speed 1/min: 2300

mm: 7.8...8.6 mm: (7,5...8,9) TD travel

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 3,1...3,7 pressure

C16

2nd speed 1/min: 1500 Supply-pump bar: 5,3...5,9 pressure 1/min: 2300 3rd speed Supply-pump pressure bar: 7,1...7,7 Overflow quantity at overflow valve: 1/min: 600 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 2300 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 cm3/: 0,0...6,0 Del.quantity 1000H.: -1/min: 2650 2nd speed cm3/: 4,5...11,5 1000H.: (3,0...11,0) Del.quantity 3rd speed 1/min: 2500 Del.quantity cm3/: 18.5...24.5 1000H.: (17,5...25,5) 1/min: 2300 4th speed cm3/: 30,8...33,2 Del.quantity 1000H.: (29,7...34,3) 1/min: 1500 5th speed Del.quantity cm3/: 29,5...30,5 1000H.: (27,7...32,3) 6th speed 1/min: 1000 Del.quantity cm3/: 29,6...32,0 1000H.: (28,5...33,1) 1/min: 600 7th speed Del.quantity cm3/: 30.5...33.5 1000H.: (29.0...35.0) Zero delivery (stop): Electr. shutoff: 1/min: 390 Speed volt: -ELAB Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 390 1st speed Del.quantity cm3/: 10,0..14,0

1000H.: (7,0...17,0)

1/min: 440

Del.quantity cm3/: 0,0...6,0 1000H.: (0,0...8,5) 3rd speed 1/min: 500

Del.quantity cm3/: 0,0...3,0 1000H.: Automatic starting fuel delivery: 1/min: 300 1st speed Del.quantity cm3/: ind. 1000H: 48,0 2nd speed 1/min: 400 Del.quantity cm3/: -1000H : 45,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K : 5,6...6,0 mm : 3,2...3,4 KF mm MS : 1,6...2,0 Remarks:

2nd speed

Note inst. in remarks column

Test sheet : VMA 2,2 L : 17.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/10F1900 R356

: 0 460 404 062 Type number

Customer-specific information

Customer : VM

Engine : HR 492

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1600 Speed Charge press. hPa: 800

Setting value mm: 5,1...5,5

Supply-pump pressure:

1/min: 1600 Charge press. hPa: 800 Setting value bar: 5,5...6,1 Full-load del. with charge press.:

1/min: 1600 Speed Charge press. hPa: 800

1000H : -

Full-load del. w/out charge press.:

1/min : 600 Del.quantity cm3/

1000H.: 33,0...34,0

Low-idle speed regulation:

Speed 1/min: 3 Charge press. hPa: -1/min: 350 Del.quantity cm3/

1000H.: 16,0...20,0

cm3/: 3.0Dispersion 1000H.: -

Full-load speed regulation:

1/min: 1030 Speed Charge press. hPa: 800 Del.quantity cm3/

1000H: 17,0...23,0

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity mind cm3/1000H.: 65.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 800

TD travel mm: 1,0...18 mm: (0,7...2,1)

2nd speed 1/min: 1600 Charge press. hPa: 800

TD travel mm: 5,1...5,5 mm: (4,6...6,0)

3rd speed 1/min: 1900

Charge press. hPa: 800 mm: 6,7...7,5 TD travel

mm: (6, 4, ..., 7, 8)

Supply-pump pressure characteristic:

1st speed 1/min: 1000

06 1.0 1000	
Charge press. hPa: 800	
Supply-pump !	Mech. shutoff:
pressure bar: 3,54,1	
2nd speed 1/min: 1600	Speed 1/min: 1900
Charge press. hPa: 800	
Charles area	Del.quantity cm3/: 03
Supply-pump	1000H.: -
pressure par: 5.56.1	
3rd speed 1/min: 1900	Electr. shutoff:
Charge press. hPa: 800	
Supply-pump 1	Speed 1/min: 400
pressure bar: 6,57,1	ELAB volt: 12,0
picosca e par. Upisación i	
061	Deliquantity cm3/: 0,03,0
Overflow quantity at overflow valve:	max. 1000H.: -
1	
1st speed 1/min: 600	Idle delivery:
Charge press. hPa: -	•
Oveflow : 4183	1st speed 1/min: 350
quantity cm3/10s: (2698)	Dol graptity om7/: 16 0 20 0
2nd consider 4 /wine 4000	Del.quantity cm3/: 16.020.0 1000H.: (13.023.0)
2nd speed 1/min: 1900 !	100011: (13,023,0)
Charge press. hPa: 800	2nd speed 1/min: 43U
Overflow : 55138	Del.quantity cm3/: 0,06,0
quantity cm3/10s: (40153)	1000H.: -
	1000111
Nelivery-ment and breakeyev chan:	Automatic stanting fuel delivery
Delivery-quant. and breakaway char.:	Automatic starting fuel delivery:
1	
1st speed 1/min: 750	1st speed 1/min: 350
Charge-air pressure-setting !	Charge press. hPa: -
point hPa: 300	Del.quantity cm3/: -
Del.quantity cm3/: 42,043,5	ind. 1000H: 45_0
1000H.: (40,545,5)	11101
25d cood 1/via 2070	2nd mand 4/wins /50
2nd speed 1/min: 2070	2nd speed 1/min: 450
Charge press. hPa: 800	Change press. hPa: -
Del.quantity cm3/: 0,03,0	Del.quantity cm3/: -
1000H.: -	max. 1000H : 40_0
3rd speed 1/min: 2030	
Charge press. hPa: 800	Shutoff electromagnet:
Dol mintity on 7/1 17 0 27 0	Strator revectionagies.
Del.quantity cm3/: 17,023,0	
1000H.: (16,024,0)	Cut-in
4th speed 1/min: 1900	min. voltage : 10,0
Charge press. hPa: 800	Rated voltage : 12,0
Del.quantity cm3/: 44,947,9	
1000H.: (43,449,4)	Mounting and assembly dimensions:
5th speed 1/min: 1600	ribationing and absoluting armonotories.
	Designation
Charge press. hPa: 800	Designation
Del.quantity cm3/: 47,048,0	K mm: 3,23,4
1000H.: (45,549,5)	KF mm: 5,66,0
6th speed 1/min: 1600	MS mm : 1.31.7
Charge press. hPa: -	SVS max. mm : 5.7
Del.quantity cm3/: 31,034,0	The state of the s
4000u	Davantana
1000H.: -	Remarks:
7th speed 1/min: 750	
Charge press. hPa: 300	Operate control lever after each
Del.quantity cm3/: 42,543,5	manifold-pressure compensator pressure
1000H.: (40,545,5)	change.
8th speed 1/min: 600	
	+ Connection at adjusting sut 1/6)
Charge press. hPa: -	* Correction at adjusting nut (46)
Del.quantity cm3/: 33_034_0	
1000H: (31,036,0)	
Zero delivery (stop):	
· · · · · · · · · · · · · · · · · · ·	

Note inst. in remarks column

: SOF 2,5 P2 Test sheet Edition : 17.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/10F2050 R361 Type number : 0 460 404 064

Customer-specific information Customer : SOFIM

: 8144.97.2280 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening.

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 2,8...3,2

Supply-pump pressure:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value bar: 5,1...5,7 Full-load del. with charge press.:

Speed 1/min: 1200 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 65,0...66,0

cm3/ : 3,0 Dispersion

1000H : -

Full-load del. w/out charge press.:

1/min : 500 Speed

Deliquantity cm3/

1000H.: 42,0...43,0

Low-idle speed regulation:

Speed 1/min: 425 Charge press. hPa: -Del.quantity cm3/ 1000H.: 9.0...13.0 Dispersion cm3/: 3.0

1000H.: Residual-Delivery Setting Speed 1/min: 500 Charge press. hPa: -

Deliquantity cm3/

1000H.: 3,0...7,9

Full-load speed regulation:

1/min: 2500 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 21,0...27,0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity mind cm3/1000H.: 70,0

Load-dependent start of delivery:

1/min: 1000 Speed Charge press. hPa: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

mm: 0,9...1,7 TD travel mm: (0,6...2,0)

2nd speed 1/min: 1000 Charge press. hPa: 1000

TD travel mm: 2,83,2	6th speed 1/min: 1200
mm: (2,53,5)	Charge press. hPa: 1000
3rd speed 1/min: 2000	Del.quantity cm3/: 64.765.7 1000H.: (63.267.2)
Charge press. hPa: 1000	1000H.: (63,267,2)
TD travel mm: 7.48.2	7th speed 1/min: 800
mm: (7,18,5)   4th speed 1/min: 2200	Charge press. hPa: 400
Charge press. hPa: 1000	Deliquantity cm3/: 55.556.5 1000H.: (53.558.5)
TD travel mm: 8,39,1	8th speed 1/min: 800
trim: (8,09,4)	Charge press. hPa: 1000
	Del.quantity cm3/: 62,565,5
Supply-pump pressure characteristic:	1000H: -
	9th speed 1/min: 500
1st speed 1/min: 600	Charge press. hPa: -
Charge press. hPa: 1000	Del.quantity cm3/: 42,043,0
Supply-pump	1000H: (43,548,5)
pressure bar: 4,14,7 ! 2nd speed 1/min: 1000 !	Zero delivery (stop):
Charge press. hPa: 1000	zero de civery (scop).
Sunn I v=numn I	
pressure bar: 5.15.7	Electr. shutoff:
3rd speed 1/min: 2000	
Charge press. hPa: 1000	Speed 1/min: 425
Supply-pump	ELAB volt: 12,0
pressure bar: 7,37,9	Del.quantity cm3/: 0,03,0
Overflow and the strength of the	max. 1000H.: -
Overflow quantity at overflow valve:	Talla dalibuanus
1st speed 1/min: 500	Idle delivery:
Charge press. hPa: -	1st speed 1/min: 425
Oveflow : 4183	Del.quantity cm3/: 9,013,0
quantity cm3/10s: (2698)	1000H.: (8,014,0)
2nd speed 1/min: 2300	2nd speed 1/min: 475
Charge press. hPa: 1000	Del.quantity cm3/: 3,09,0
Over flow : 55138	1000H.: -
quantity cm3/10s: (40153)	
Dolivery week and breekeys about	Residual:
Delivery-quant. and breakaway char.:	Connect 4 Avino 450
1st speed 1/min: 800	Speed 1/min: 650
Charge-air pressure-setting	Del.quantity : 1,04,0
point hPa: 400	100011.
Del.quantity cm3/: 55,556,5	Arrangement of drivers on engine-
1000H.: (53,558,5)	speed lever for exhaust-gas-
2nd speed 1/min: 2600	recirculation valve linkage (guage)
Charge press. hPa: 1000	4.4.4.4.000
Del. quantity cm3/: 1,06,0	1st speed
1000H.: - ! 3rd speed 1/min: 2500 !	Charge press. hPa: -
Charge press. hPa: 1000	Deliquantity cm3/: 42,044,0 1000H.: (40,545,5)
Del. quantity cm3/: 21,027,0	1000116. (40,000)
1000H.: (20,028,0)	Automatic starting fuel delivery:
4th speed 1/min: 2300	The same of the sa
Charge press. hPa: 1000	1st speed 1/min: 200
Del.quantity cm3/: 56,559,5	Charge press. hPa: -
1000H.: (55,860,2)	Del.quantity cm3/: -
5th speed 1/min: 1950	ind. 1000H: 70,0
Charge press. hPa: 1000	2nd annual 4 /min : 750
Del.quantity cm3/: 63,066,0   1   1000H.: -	2nd speed 1/min: 350
I COCATA . "	Charge press. hPa: -

Del.quantity cm3/: - max. 1000H : 41,5

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,6...6,0
MS mm : 1,6...2,0
SVS max. mm : -

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Note inst. in remarks column

: SOF 2.5 P3 Test sheet Edition : 17.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/10F2050 R364

: 0 460 404 066

Customer-specific information Customer : SOFIM

Engine : 8140.67.2580

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Injection-pump setting values

Test specifications in parentheses

Timing-device travel:

1/min: 1000

Setting value mm: 4,0...4,4

Supply-pump pressure:

1/min: 1000 Speed

Setting value bar: 4,5...5,1

Full-load del. w/out charge press.:

Speed 1/min : 2000

Del.quantity cm3/

1000H.: 38,5...39,5 cm3/: 3,0

Dispersion

1000H.: -

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 14,0...18,0 Dispersion cm3/: 3,0

1000H.: -

Full-load speed regulation:

Speed 1/min: 2200

Deliquantity cm3/

1000H: 13,0...19,0

Start:

Speed 1/min: 100

Del.quantity

mind cm3/1000H.: 70.0

Load-dependent start of delivery:

Speed 1/min: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600

TD travel mm: 1,9...2,7

mm: (1,6...3,0)

1/min: 1000 2nd speed

TD travel mm: 4,0...4,4

mm: (3,5...4,9)

1/min: 1800 3rd speed

TD travel mm: 8,0...8,8

mm: (7, 7, ..., 9, 1)

1/min: 2000 4th speed

TD travel

mm: 8,6...9,4 mm: (8,3...9,7)

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 3,5...4,1 1/min: 1000 pressure

2nd speed

Supply-pump

pressure bar: 4,5...5,1

1/min: 2000 3rd speed

Supply-pump

bar: 7,0...7,6 pressure

Overflow quantity at overflow valve: 1st speed 1/min: 600 Oveflow : 41...83 cm3/10s: (26...98) 1/min: 2000 quantity 2nd speed Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2330 Del.quantity cm3/: 0 1000H.: cm3/: 0.0...3.01/min: 2200 2nd speed Del.quantity cm3/: 13.0...19.0 1000H.: (12.0...20.0) 3rd speed 1/min: 2150 Del.quantity cm3/: 23,5...30,5 Del.quantity cms/... 4th speed 1/min: 2000 Del.quantity cm3/: 38,5...39,5 1000H.: (37,0...41,0) 1/min: 1000 5th speed Deliquantity cm3/: 43,0...46,0 1000H.: (41,5...47,5) 1/min: 600 6th speed Del.quantity cm3/: 37.5...40.5 1000H.: (35.5...42.5) 7th speed 1/min: 500 Del.quantity cm3/: 36,2...39,8 1000H.: (34,5...41,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

Automatic starting fuel delivery:

1st speed 1/min: 400

Del.quantity cm3/: ind. 1000H: 44,0

2nd speed 1/min: 500 Del.quantity cm3/: max. 1000H: 44,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

KF mm : 5,6...6,0
MS mm : 1,6...2,0
SVS max. mm : 1,9

Note inst. in remarks column

Test sheet : VWW 2,4 \$10 : 19.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/10F2150 L354 Type number : 0 460 406 063

Customer-specific information

Customer

Engine : 087-LT

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 000

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 2,8...3,2

Supply-pump pressure:

1/min: 1500 Setting value bar: 6,0...6,6

full-load del. w/out charge press.:

1/min : 1250 Speed

Deliquantity cm3/

1000H.: 28.5...29.5 cm3/: 2.5

Dispersion

1000H.: -

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/

1000H.: 6,0...10,0

cm3/: 2.0 1000H.: (3,0) Dispersion

Full-load speed regulation:

Speed 1/min: 2325

Deliquantity cm3/

1000H: 10,0...14,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 35.0 mind

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000

mm: 0,5...1,3 TD travel mm: (0,2...1,6)

1/min: 1500 2nd speed

mm: 2,8...3,2 mm: (2,3...3,7) TD travel

1/min: 1700 3rd speed

TD travel mm: 3,6...4,4

mm: (3,3...4,7)

1/min: 2150 4th speed

mm: 3,7...4,5 mm: (3,4...4,8) TD travel

Supply-pump pressure characteristic:

1/min: 750 1st speed

Supply-pump

bar: 4,0...4,6 pressure 1/min: 1500 2nd speed

Supply-pump

pressure bar: 6,0...6,6

3rd speed 1/min: 2150

Supply-pump

bar: 7,7...8,3 pressure

# Overflow quantity at overflow valve:

1st speed 1/min: 750 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 2150 Overflow : 55...138 quantity cm3/10s: (40...153)

# Delivery-quant. and breakaway char .:

1st speed 1/min: 2500 Del.quantity cm3/: 0,0...6,0 1000H.: 1/min: 2325 2nd speed Del.quantity cm3/: 10,0...14,0 1000H.: (8,0...16,0) 1/min: 2275 3rd speed Del.quantity cm3/: 12,5...22,5 1000H.: (11,5...23,5) 1/min: 2150 4th speed Del.quantity cm3/: 22,0...24,0 1000H.: (20,8...25,2) 5th speed 1/min: 1250 Del.quantity cm3/: 28,5...29,5 1000H.: (26,8...31,2) 6th speed 1/min: 750 Del.quantity cm3/: 26.0...29.0 1000H.: (24,5...30,5)

# Zero delivery (stop):

#### Electr. shutoff:

Speed 1/min: 375
ELAB volt: Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375
Del.quantity cm3/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

#### Automatic starting fuel delivery:

1000H: 35,0

1st speed 1/min: 300
Del.quantity cm3/: 1000H: 35,0

2nd speed 1/min: 500
Del.quantity cm3/: -

# Shutoff electromagnet:

Cut-in min. voltage : 10,0 Rated voltage : 12,0

# Mounting and assembly dimensions:

Designation

Remarks:

max.

Note inst. in remarks column

Test sheet : PER

Edition : 10.07.89

replaces

Calibrating oil : ISO 4113

: VE 4/11F2250 R327 Injection pump

Type number : 0 460 414 065

Customer-specific information Customer : PERKINS

Engine : PRIMA N/A

TEST BENCH REQUIREMENTS

Calibrating-oil oC return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block Piston stroke mm: 1,1 mm: -

**Outlet** : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1800 Speed Setting value mm: 4,2...4,6 KSB solenoid-operated valve volt: 12,0

Supply-pump pressure:

1/min: 1800 Setting value bar: 6,7...7,3

KSB solenoid-operated valve volt: 12.0

Full-load del. W/out charge press.:

1/min : 450

Del.quantity cm3/

1000H.: 32,0...33,0

KSB solenoid-operated volt: 12,0 valve

Low-idle speed regulation:

1/min: 400 Speed

Del.quantity cm3/ 1000H.: 7,0...9,0

KSB solenoid-operated valve volt: 12,0

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/

1000H: 28,0...30,0

KSB sulenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 70.0 KSB solenoid-operated valve volt: 12,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel

mm: 1,7...1,9 mm: (1,0...2,6) \*

KSB solenoid-operated volt: valve 2nd speed 1/min: 1200

TD travel mm: 1,4...3,4 ×

KSB solenoid-operated valve voit: -1/min: 1200 3rd speed mm: 1,1...1,9 TD travel

mm: (0,8...2,2)KSB solenoid-operated

valve volt: 12.0

4th speed 1/min: 1500	KSB solenoid-operated
TD travel mm: 2,53,3	valve volt: 12,0
mm: (2,2,2,6)	Del.quantity cm3/: 28,030,0
KSB solenoid-operated	1000H.: (25,033,0
valve volt: 12,0	l 3rd speed 1/min: 2250
valve volt: 12.0 5th speed 1/min: 1800	KSB solenoid-operated
TD travel mm: 4,24,6	l valve volt: 12,0
mm: (3,75,1)	1 Del.quantity cm3/: 53,558,5
KSB solenoid-operated	1000H.: (52,060,0
valve volt: 12,0	1 4th speed 1/min: 1000
6th speed 1/min: 2250	I KSB solenoid-operated
TD travel mm: 6,47,2	I valve volt: 12,0
mm: $(6,17,5)$	Del.quantity cm3/: 47,548,5
KSB solenoid-operated	1000H.: (45,051,0
valve volt: 12,0	I 5th speed 1/min: 450
10111 1070	KSB solenoid-operated
Supply-pump pressure characteristic:	I valve volt: 12,0
outpry pulp prossure character racte.	
1st speed	Del.quantity cm3/: 32,033,0
	1000H.: (28,536,5)
Supply-pump	Tong delicence (about
pressure bar: 5,35,9	¿ Zero delivery (stop):
KSB solenoid-operated	ŧ
valve volt: 12,0	
2nd speed 1/min: 1000	Electr. shutoff:
Supply-pump 5.7.5.	
pressure bar: 5,35,9	Speed 1/min: 400
KSB solenoid-operated	I ELAB volt: -
valve volt: 12.0	Del.quantity cm3/: 0,03,0
3rd speed 1/min: 1800	1 max. 1000H.: -
Supply-pump	Į
pressure bar: 6,77,3	I Idle delivery:
KSB solenoid-operated	1
valve volt: 12,0	l 1st speed 1/min: 400
4th speed 1/min: 2250	1 KSB solenoid-operated
Supply-pump	l valve volt: 12,0
pressure bar: 7,58,1	l Del.quantity cm3/: 7,09,0
KSB solenoid-operated	1000H.: (4,012,0)
valve volt: 12,0	l 2nd speed 1/min: 500
	I KSB solenoid-operated
Overflow quantity at overflow valve:	i valve volt: 12,0
The state of the s	Del.quantity cm3/: 1,57,5
1st speed 1/min: 450	1000H.: (0,58,5)
KSB solenoid-operated	100011. (0,01.10,0)
valve volt: 12,0	Automatic starting fuel delivery:
Oveflow : 72116	i Admidite starting ruet decivery.
quantity cm3/10s: (57131)	l 1st speed 1/min: 100
	1 1st speed 1/min: 100
2nd speed 1/min: 2250	KSB solenoid-operated
KSB solenoid-operated	valve volt: 12,0
valve volt: 12,0	Del.quantity cm3/: -
Over flow : 55111	ind. 1000H: 70,0
quantity cm3/10s: (40126)	
B. 15	2nd speed 1/min: 400
Delivery-quant. and breakaway char.:	KSB solenoid-operated
	valve volt: 12,0
1st speed 1/min: 2600	Del.quantity cm3/: -
KSB solenoid-operated	l max. 1000H : 50,0
valve volt: 12,0	
Del.quantity cm3/: 0,015,0	<pre>Shutoff electromagnet:</pre>
1000H.: -	ĺ
2nd speed 1/min: 2500	1

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

# Mounting and assembly dimensions:

Designation K mm : 3,2...3,4 mm : K-OT mm : 1,1...1,5 mm : 20,0...22,0 mm : 10,5...13,9 MS XK XL

## Remarks:

★ Unscrew KSB ball valve 2 mm

Note inst. in remarks column

Test sheet : VMA Edition : 10.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/11F1800 L363 Type number : 0 460 416 064

Customer-specific information

Customer

Engine : HR 694 HJ/10

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 1000

Setting value mm: 3,8...4,2

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value bar: 6,1...6,7 Full-load del. with charge press.:

Speed 1/min: 1500

Charge press. In ...
Del.quantity cm3/
1000H.: 82.5...83,5
Dispersion cm3/: 3,5

Full-load del. w/out charge press.:

1/min : 600

Del.quantity cm3/

1000H.: 69,0...70,0

Low-idle speed regulation:

1/min: 450 Speed Charge press. hPa: -

Del.quantity cm3/

1000H.: 21,0...25,0 cm3/: 3,5

Dispersion 1000H.: -

Full-load speed regulation:

1/min: 2000 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 52.0...58.0

Start:

1/min: 100 Speed Charge press. hPa: -Del. quantity mind cm3/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 1500 Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed Charge press. hPa: 1000

mm: 1,4...2,2 TD travel mm: (1, 1, ... 2, 5)

2nd speed 1/min: 1500

Charge press. hPa: 1000
TD travel mm: 3,8...4,2
mm: (3,3...4,7)
3rd speed 1/min: 1800

Charge press. hPa: 1000

Del.quantity cm3/: 69,0...70,0 1000H.: (67,0...72,0) TD travel mm: 4,9...5,7 mm: (4,6...6,0)8th speed 1/min: 600 Charge press. hPa: -Supply-pump pressure characteristic: Del.quantity cm3/: 49.0...50.0 1000H: (47,0...52.0) 1st speed 1/min: 600 Charge press. hPa: 1000 Supply-pump Zero delivery (stop): bar: 3,0...3,6 1/min: 1500 pressure 2nd speed Mech. shutoff: Charge press. hPa: 1000 1/min: 1800 Supply-pump Speed Del.quantity cm3/: 0..3 1000H.: bar: 6,1...6,7 pressure 3rd speed 1/min: 1800 Charge press. hPa: 1000 Supply-pump Electr. shutoff: bar: 7,1...7,7 pressure 1/min: 450 Speed Overflow quantity at overflow valve: ELAB volt: 12.0 Del.quantity cm3/: 0,0...3,0 1/min: 600 1000H.: -1st speed Charge press. hPa: 1000 Oveflow : 41...83 Idle delivery: quantity cm3/10s: (26...98) 2nd speed 1/min: 1800 1st speed 1/min: 450 Charge press. hPa: 1000 Del.quantity cm3/: 21,0..25,0 1000H.: (19,0..27,0) Overflow : 55...138 quantity cm3/10s: (40...153) 1/min: 500 2nd speed Del.quantity cm3/: 16,5..21,5 1000H.: (14,5..23,5) Delivery-quant. and breakaway char.: 1/min: 600 3rd speed Del.quantity cm3/: 1,0...7,0 1/min: 600\* 1st speed 1000H.: -Charge-air pressure-setting point hPa: 400 LDA stroke mm: 5,2 Del.quantity cm3/: 69,0...70,0 1000H.: (67,0...72,0) 2nd speed 1/min: 2130 Automatic starting fuel delivery: 1st speed 1/min: 300 Charge press. hPa: -Charge press. hPa: 1000 Del.quantity cm3/: 0,0...8,0 1000H.: -Del.quantity cm3/: -1000H: 66,0 ind. 3rd speed 1/min: 2000 1/min: 400 2nd speed Charge press. hPa: 1000
Del.quantity cm3/: 52.0...58.0
1000H.: (51.0...59.0)
4th speed
1/min: 1800 Charge press. hPa: Del.quantity cm3/: max. 1000H: 55,0 Charge press. hPa: 1000 Del.quantity cm3/: 76.0...79.0 1000H.: (75.0...80.0) Shutoff electromagnet: Cut-in 1/min: 1500 : 10,0 5th speed min. voltage Charge press. hPa: 1000 Rated voltage : 12,0 Del.quantity cm3/: 82,5...83,5 1000H.: (81,0...85,0) Mounting and assembly dimensions: 1/min: 600 6th speed Charge press. hPa: 1000 Del.quantity cm3/: 84,0...88,0 1000H.: -Designation K mm : KF mm : 5,6...6,0mm : 0,8...1,2 7th speed 1/min: 600 MS ΧK mm: 20,0...22,0 Charge press. hPa: 400 mm: 9,7...13,1

Pushing electromagnet.

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : VOL 4,1 H1 : 18.07.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/11F1900 L218-8 Injection pump

: 0 460 416 065 Type number

Customer-specific information Customer : PENTA

Engine : TAMD 41B

Power k: 132 Speed 1/mi: -

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness x Length mm: 450

Start of delivery

Prestroke mm : 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1200 Speed Charge press. hPa: 1000 Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 1200

D05

Charge press. hPa: 1000 Setting value bar: 5,9...6,5

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 88,0...89,0

cm3/:5,0 Dispersion 1000H :

Full-load del. w/out charge press.:

1/min : 650 Speed

Deliquantity cm3/

1000H.: 58,5...59,5

Low-idle speed regulation:

Speed 1/min: 325 Charge press. hPa: -Del.quantity cm3/ 1000H.: 25,0...29,0

full-load speed regulation:

Speed 1/min: 2050 Charge press. hPa: 1000

Deliquantity cm3/

1000H: 67,0...73,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 80.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 1000

TD travel mm: 0,6...1,6 mm: (0,4...1,8)

1/min: 1200 2nd speed

Charge press. hPa: 1000 TD travel mm: 2,0...2,4 mm: (1,5,...2,9)

1/min: 1700 3rd speed

Charge press. hPa: 1000 mm: 3,5...4,3 TD travel

mm: (3,2...4,6)

4th speed 1/min: 1900 Charge press. hPa: 1000

mm: 3,7...4,5 TD travel

mm: -

Supply-pump pressure characteristic:	Charge press. hPa: 1000 Del.quantity cm3/: 92,095,0
Toppey part product of small do ton rotte.	1000H.: (90,596,5)
1st speed 1/min: 500	! 8th speed 1/min: 800
Charge press. hPa: 1000	Charge press. hPa: 200
Supply-pump pressure bar: 4,24,8	Del.quantity cm3/: 72,573,5 1 1000H: (70,076,0)
2nd speed 1/min: 1000	9th speed 1/min: 800
Charge press. hPa: 1000	Charge press. hPa: 1000
Supply-pump pressure bar: 5.56.1 3rd speed 1/min: 1200	Del.quantity cm3/: 78,581,5
pressure bar: 5,56,1	1000H: (77.083.0)
Charge press. hPa: 1000	1 10th speed 1/min: 650
Supply-pump	<pre>Charge press. hPa: - Del.quantity cm3/: 58,559,5</pre>
pressure bar: 5,96,5	1000H: (56,062,0)
4th speed 1/min: 1900	
Charge press. hPa: 1000	Zero delivery (stop):
Supply-pump pressure bar: 7,48,0	l Moch shutoff.
pi essure pai . 1,4o,0	l Mech. shutoff: l
Overflow quantity at overflow valve:	Speed 1/min: 1900
454 555 46 55 46 5	Del.quantity_cm3/: 03
1st speed 1/min: 650   Charge press. hPa: 1000	1000H.: ~
Oveflow : 4183	Electr. shutoff:
quantity cm3/10s: (2698)	
2nd speed 1/min: 1900	Speed 1/min: 325
Charge press. hPa: 1000	ELAB volt: -
Overflow : 55138   quantity cm3/10s: (40153)	Del.quantity cm3/: 0,03,0 max. 1000H.: -
quarterty emb/10s. (40133/	I IIIOX. I COOM.
Delivery-quant. and breakaway char.:	Idle delivery:
	•
1st speed 1/min: 800*	1st speed 1/min: 325
1st speed 1/min: 800* Charge-air pressure-setting	1st speed
1st speed 1/min: 800*   Charge-air pressure-setting   point hPa: 200   LDA stroke mm: 4,5	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0)	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5)
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: - Automatic starting fuel delivery:
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4.5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: -	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: -
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: - 4th speed 1/min: 2050 Charge press. hPa: 1000	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: - Automatic starting fuel delivery: 1st speed 1/min: 300
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4.5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: - 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200  LDA stroke mm: 4,5  Del.quantity cm3/: 72,573,5  1000H.: (70,076,0)  2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0  1000H.: -  3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5  1000H.: -  4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0)	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: -
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: - 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) 5th speed 1/min: 1900	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: - 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) 5th speed 1/min: 1900 Charge press. hPa: 1000	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: - max. 1000H: 70,0
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: - 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 79,083,0 1000H.: (77,085,0)	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: -
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: - 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: - 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) 5th speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 79,083,0 1000H.: (77,085,0) 6th speed 1/min: 1500	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: - max. 1000H: 70,0  Shutoff electromagnet: Cut-in
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) Sth speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 79,083,0 1000H.: (77,085,0) 6th speed 1/min: 1500 Charge press. hPa: 1000	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: - max. 1000H: 70,0  Shutoff electromagnet: Cut-in min. voltage : 10,0
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) Sth speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 79,083,0 1000H.: (77,085,0) 6th speed 1/min: 1500 Charge press. hPa: 1000 Del.quantity cm3/: 88,089,0	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: - max. 1000H: 70,0  Shutoff electromagnet: Cut-in
1st speed 1/min: 800* Charge-air pressure-setting point hPa: 200 LDA stroke mm: 4,5 Del.quantity cm3/: 72,573,5 1000H.: (70,076,0) 2nd speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 0,04,0 1000H.: 3rd speed 1/min: 2150 Charge press. hPa: 1000 Del.quantity cm3/: 4,511,5 1000H.: 4th speed 1/min: 2050 Charge press. hPa: 1000 Del.quantity cm3/: 67,073,0 1000H.: (64,076,0) Sth speed 1/min: 1900 Charge press. hPa: 1000 Del.quantity cm3/: 79,083,0 1000H.: (77,085,0) 6th speed 1/min: 1500 Charge press. hPa: 1000	1st speed 1/min: 325 Del.quantity cm3/: 25,029,0 1000H.: (22,032,0) 2nd speed 1/min: 400 Del.quantity cm3/: 5,011,0 1000H.: (3,512,5) 3rd speed 1/min: 480 Del.quantity cm3/: 0,03,0 1000H.: -  Automatic starting fuel delivery: 1st speed 1/min: 300 Del.quantity cm3/: - ind. 1000H: 70,0  2nd speed 1/min: 500 Del.quantity cm3/: - max. 1000H: 70,0  Shutoff electromagnet: Cut-in min. voltage : 10,0

Designation

K mm : KF mm : K-0T
MS mm : 0,6...1,0

XK mm : 21,8...23,8

XL mm : 11,2...14,6

## Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

★ Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 3,9 E6 Test sheet : 13.07.89 Edition

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 4/12F1250 R226-2

Type number : 0 460 424 024

Customer Part-No.: 3 908 192

Customer-specific information

Customer

Engine : 4 BT 390 IND

TEST BENCH REQUIREMENTS

Calibrating-oil oC return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0,3 Prestroke

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1\_8

mm: +-0.02(0.06)

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

**B00** 

mm: 2,0...2,4 Setting value

Supply-pump pressure:

1/min: 900 Speed Setting value bar: 4,6...5,2

Full-load del. w/out charge press.:

1/min : 1100 Speed

Del.quantity cm3/

1000H.: 68,5...69,5

cm3/: 4.0 Dispersion 1000H.: (4,5)

Low-idle speed regulation:

1/min: 335 Speed

Deliquantity cm3/

1000H.: 8,0...14,0 cm3/: 5,5 1000H.: (7,0)

Dispersion

Full-load speed regulation:

1/min: 1290 Speed

Del.quantity cm3/

1000H: 58,0...64,0

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

TD travel mm: 0,8...1,6 mm: (0,5...1,9)

1/min: 900 2nd speed

TD travel mm: 2,0,..2,4

mm: (1,5...2,9)

3rd speed 1/min: 1100 TD travel

mm: 2,9...3,7 mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

pressure bar: 2,7...3,3

1/min: 750 2nd speed

Supply-pump

bar: 3,9...4,5 pressure

1/min: 900 3rd speed

Supply-pump pressure bar: 4,6...5,2 4th speed 1/min: 1100 Supply-pump bar: 5.4...6.0 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1250 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1450 1st speed cm3/: 0.0...3.0 Del.quantity 1000H.: -2nd speed 1/min: 1400 cm3/: 0,0...15,0 Del. quantity 1000H.: -1/min: 1360 3rd speed Del.quantity cm3/: 15,0...55,0 1000H.: -1/min: 1290 4th speed Del.quantity cm3/: 58,0...64,0 1000H.: (55,0...67,0) 1/min: 1250 5th speed cm3/: 66.5...69.5 1000H.: (65.0...71.0) 1/min: 1100 Del.quantity 6th speed Del.quantity cm3/: 68,5...69,5 1000H.: (66,0...72,0) 1/min: 750 7th speed Del.quantity cm3/: 73,0...77,0 1000H.: (71,0...79,0) 1/min: 500 8th speed Del.quantity cm3/: 74,0...82,0 1000H: (72,0...84,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 335 Speed ELAB voit: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery:

1/min: 335

1st speed

D09

Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,0...4,0 1000H.: -

# Automatic starting fuel delivery:

2nd speed 1/min: 300 Del.quantity cm3/: max. 1000H: 80,0

# Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

## Mounting and assembly dimensions:

Designation

K mm KF 5,0...5,4 ולוניו MS : 0,8...1,2 mm SVS max. : 4,8 min 18,8...20,8 XK mm : 11,5...14,9 XL mm

Note inst. in remarks column

Test sheet : CAS 3,9 L1 Edition : 12.07.89

replaces

: ISO 4113 Calibrating oil

: VE 4/12F1100 R 226-7 Injection pump

Type number : 0 460 424 046

Customer-specific information

Customer

: 4 BT-390 580K Engine

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening.

pressure bar: 250...253

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed

Setting value mm: 2,3...2,7

D10

Supply-pump pressure:

1/min: 900

Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 750

Del.quantity cm3/

1000H.: 63,5...64,5

cm3/: 4.0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 475

Del.quantity cm3/

1000H.: 6,0...12,0 cm3/: 5,5 1000H.: (7,0)

Dispersion

Full-load speed regulation:

Speed 1/min: 1150

Del.quantity cm3/

1000H: 42,0...48,0

Start.

1/min: 100 Speed

Del.quantity

cm3/1000H.: 70,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 650

TD travel

mm: 0.7...1.5 mm: (0.4...1.8)

1/min: 900 2nd speed

TD travel mm: 2,3...2,7 mm: (1,8...3,2)

1/min: 1100 3rd speed TD travel mm: 3,1...3,9

mm: (2,8...4,2)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

pressure bar: 2,4...3,0

2nd speed 1/min: 900

Supply-pump

pressure bar: 4,1...4,7

1/min: 1100 3rd speed

Supply-pump bar: 4.9...5.5 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1100 2nd speed : 55...138 Over flow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1250 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1220 Del.quantity cm3/: 0,0...15,0 1000H.: -1/min: 1180 Deliquantity cms/...
1000H.: -3rd speed cm3/: 15,0...55,0 1/min: 1150 4th speed Del.quantity cm3/: 42.0...48.0 1000H.: (39.0...51.0) 5th speed 1/min: 1100 Del.quantity cm3/: 61,5...62,5 1000H.: (59,0...65,0) 1/min: 900 6th speed Del.quantity cm3/: 60,8...63,8 1000H.: (58\_8...65\_8) 1/min: 750 7th speed Del.quantity cm3/: 63.5...64.5 1000H.: (61.0...67.0) 1/min: 500 8th speed Del.quantity cm3/: 61,0...69,0 1000H: (59,0...71,0) Zero delivery (stop): Mech. shutoff: 1/min: 1100 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 475 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 475

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 70,0 ind. 2nd speed 1/min: 240 Del.quantity cm3/: - max. 1000H: 70,0 Shutoff electromagnet: Cut-in min. voltage : 10.0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation mm 5,0...5,4 KF THE 5ر1 . . . 1ر1 : MS mm SVS max. mm Remarks: : CASE # 391 4487

1st speed 1/min: 475
Del.quantity cm3/: 6,0...12,0
1000H.: (4,0...14,0)
2nd speed 1/min: 550

#### Note inst. in remarks column

Test sheet : CUM 3.9 P : 10.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R359-1 Type number : 0 460 424 055

Type number

Customer-specific information

: CDC Customer

Engine : 4 BT

k: 79 1/mi: 2500 Power Speed

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforaced-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Note inst. in remarks column

Test sheet : CUM 5,9 A Edition : 13.07.89 : 07.84 replaces Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R159-2 : 0 460 426 042 Type number

Customer-specific information

Customer : CDC

Engine : 6 BT

Power k: 106 1/mi: -Speed

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening.

bar: 207...210 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0,02(0,06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 750 Setting value bar: 3,6...4,2

Full-load del. w/out charge press.:

1/min: 900 Speed

Deliquantity cm3/

1000H.: 82,0...83,0

cm3/: 4,0 Dispersion 1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Deliquantity cm3/

1000H.: 22.0...28,0 cm3/: 5,5

Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1220

Deliquantity cm3/

1000H: 34,0...40,0

Start:

Speed 1/min: 100

Del.quantity cm3/1000H.: 100,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel mm: 1,2...2,0 mm: (0,9...2,3)

2nd speed 1/min: 750

TD travel mm: 3,1...3,5

mm: (2,6...4,0)

1/min: 1100 3rd speed

mm: 5,1...5,9 TD travel mm: (4,8...6,2)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,6...3,2 pressure

1/min: 750 2nd speed

D13

Supply-pump pressure

bar: 3,6...4,2 1/min: 1100

3rd speed

Supply-pump pressure bar: 5,0...5,6

Overflow quantity at overflow valve:

1st speed Oveflow

1/min: 500 : 41...83

quantity cm3/10s: (26...98) 2nd speed 1/min: 1100

Over flow : 55...138 quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed

1/min: 1280 Del.quantity cm3/: 0,0...3,0 1000H.: -

2nd speed 1/min: 1220
Del.quantity cm3/: 34,0...40,0
1000H.: (31,0...43,0)
3rd speed 1/min: 1100
Del.quantity cm3/: 75,0...78,0

1000H.: (73,5...79,5)

1/min: 900 4th speed

Del.quantity cm3/: 82,0...83,0 1000H.: (79,5...85,5)

1/min: 500 5th speed

Del.quantity cm3/: 77.0...85.0 1000H.: (75,0...87,0)

Zero delivery (stop):

Mech. shutoff:

1/min: 1100 Speed

Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

Speed 1/min: 375

ELAB voit: -

Del.quantity cm3/: 0,0...3,0

1000H.: max.

Idle delivery:

1st speed 1/min: 375

Del.quantity cm3/: 22,0..28,0

1000H.: (20,0..30,0) 1/min: 450

2nd speed

Del.quantity cm3/: 0,0...3,0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

D14

Del.quantity cm3/: -1000H: 100,0

1/min: 200 2nd speed Del.quantity cm3/: -1000H : 85,0 max.

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 : 12,0 Rated voltage

Mounting and assembly dimensions:

Designation

K mm KF mm

5,0...5,4 : 1,3...1,7 : 1,5 MS min SVS max. mm

mm : 20,2...22,2 mm : 10,7...14,1 XK XL

Remarks:

: C.D.C. # 390 3366

Note inst. in remarks column

: CUM 5,9 A1 Test sheet Edition : 13.07.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R159-2 Injection pump

: 0 460 426 042 Type number Customer Part-No.: 3 917 664

Customer-specific information

Customer : CDC

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening

bar: 207...210 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

: D Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

**D15** 

Setting value mm: 3,1...3,5

Supply-pump pressure:

1/min: 750

Setting value bar: 3,6...4,2

Full-load del. w/out charge press.:

1/min : 900 Speed

Del.quantity cm3/

1000H.: 82,0...83,0

Dispersion cm3/: 4,0 1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/

1000H.: 22,0...28,0 cm3/: 5,5 1000H.: (7,0)

Dispersion

Full-load speed regulation:

Speed 1/min: 1220

Del.quantity cm3/

1000H: 34,0...40,0

Start:

1/min: 100 Speed

Del.quantity

cm3/1000H.: 100,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,2...2,0

mm: (0,9...2,3)

2nd speed 1/min: 750

TD travel mm: 3,1...3,5

mm: (2,6...4,0)

1/min: 1100 3rd speed

TD travel mm: 5,1...5,9

mm: (4,8...6,2)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,6...3,2 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,6...4,2 pressure

1/min: 1100 3rd speed

Supply-pump

bar: 5,0...5,6 pressure

Overflow quantity at overflow valve:

1/min: 500 1st speed

Oveflow : 41...83

cm3/10s: (26...98) quantity 2nd speed 1/min: 1100

Over flow : 55...138

quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1280

Del.quantity cm3/: 0,0...3,0

1000H.: -

2nd speed 1/min: 1220 Del.quantity cm3/: 34,0...40,0 1000H.: (31,0...43,0)

3rd speed 1/min: 1100 Del.quantity cm3/: 75,0...78,0

1000H.: (75,5...79,5)

1/min: 900 4th speed

Del.quantity cm3/: 82,0...83,0 1000H.: (79,5...85,5)

5th speed 1/min: 500 Del.quantity cm3/: 77,0...85.0 1000H.: (75,0...87,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100

Deliquantity cm3/: 0..3

1000H.: -

Electr. shutoff:

1/min: 375 Speed

ELAB volt: -

Del.quantity cm3/: 0,0...3,0

1000H.: max.

Idle delivery:

1st speed 1/min: 375

Del.quantity cm3/: 22,0..28,0

1000H.: (20,0..30,0)

2nd speed 1/min: 450

Del.quantity cm3/: 0,0...3,0

1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del.quantity cm3/: -

1000H: 100,0 ind.

2nd speed 1/min: 200 Del.quantity cm3/: -1000H : 85,0 max.

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm

KF : 5,0...5,4 mm : 1,3...1,7 : 1,5 : 20,2...22,2 MS mm

SVS max. mm

XΚ mm XL mm : 10,7...14,1

Note inst. in remarks column

: CUM 5,9 B1 Test sheet Edition : 13.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R159-3
Type number : 0 460 426 043

: 0 460 426 043 Type number

Customer Part-No.: 3 917 663

Customer-specific information

Customer : CDC

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening

bar: 207...210 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

D17

Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 900

Setting value bar: 4,4...5,0

Full-load del. w/out charge press.:

1/min: 900 Speed

Deliquantity cm3/

1000H.: 81,5...82,5

cm3/: 4,0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375

Deliquantity cm3/

1000H.: 18,5...24,5 cm3/: 5,5 1000H.: (7,0)

Dispersion

Full-load speed regulation:

1/min: 1230 Speed

Del.quantity cm3/

1000H: 30,0...36,0

Start:

Speed 1/min: 100

Del quantity

mind cm3/1000H.: 100\_0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,2...2,0 mm: (0,9...2,3)

1/min: 900 2nd speed

mm: 4,3...4,7 mm: (3,8...5,2) 1/min: 1150 TD travel

3rd speed

mm: 5,6...6,4 TD travel

mm: (5,3...6,7)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,7...3,3 pressure

1/min: 900 2nd speed

Supply-pump

bar: 4,3...5,0 pressure

3rd speed 1/min: 1150 Supply-pump

pressure bar: 5,4...6,0

Overflow quantity at overflow valve:

1/min: 500 1st speed

Oveflow : 41...83

quantity cm3/10s: (26...98)

2nd speed 1/min: 1150

: 55...138 Over flow quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1/min: 1290 1st speed

Del.quantity cm3/: 0,0...3,0 1000H.: -

2nd speed 1/min: 1230
Del.quantity cm3/: 30,0...36,0
1000H.: (27,0...39,0)
3rd speed 1/min: 1150
Del.quantity cm3/: 74,0...77,0
1000H.: (72,5...78,5)

1/min: 900 4th speed

Del.quantity cm3/: 81.5...82.5 1000H.: (79.0...85.0)

5th speed 1/min: 500 Del.quantity cm3/: 78.5...86.5 1000H.: (76.5...88.5)

Zero delivery (stop):

Mech. shutoff:

1/min: 1250

Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

Speed 1/min: 360

ELAB volt: -

Del.quantity cm3/: 0,0...3,0

1000H .: -

Idle delivery:

1/min: 375 1st speed

Del.quantity cm3/: 18,5..24,5 1000H.: (16,5..26,5)

1/min: 450 2nd speed

Del.quantity cm3/: 0,0...3,0

1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del.quantity cm3/: -

1000H: 100,0 ind.

2nd speed 1/min: 200 Del.quantity cm3/: -1000H: 80,0 max.

Shutoff electromagnet:

Cut-in

: 20,0 min. voltage : 24,0

Rated voltage

Mounting and assembly dimensions:

Designation

K mm

5,0...5,4 : 1,3...1,7 : 1,5 KF mm MS mm

SVS max. mm

Note inst. in remarks column

: CUM 5.9 D3 : 13.07.89 Test sheet Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R159-4

Type number : 0 460 426 044

Customer Part-No.: 3 917 665

Customer-specific information

Customer : CDC

: 6 BT Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 016

Opening

bar: 207...210 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,5 Piston stroke

mm: +-0.02(0.04)

: D **Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

D19

Setting value mm: 3,6...4,0

Supply-pump pressure:

1/min: 750

Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

1/min : 900 Speed

Del.quantity cm3/

1000H.: 83.0...84.0

Dispersion cm3/: 4,0

1000H.: (4,5)

Low-idle speed regulation:

1/min: 375 Speed

Del.quantity cm3/ 1000H.: 22,0...28,0

Full-load speed regulation:

Speed 1/min: 1125

Del.quantity cm3/

1000H: 37,0...43,0

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 100,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,8...2,6

mm: (1,5...2,9)

1/min: 750 2nd speed

TD travel

mm: 3.6...4.0 mm: (3.1...4.5)

1/min: 900 3rd speed

TD travel mm: 4,6...5,4

mm: (4,3...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,0...3,6 1/min: 750 pressure

2nd speed

Supply-pump

bar: 4,2...4,8 pressure

3rd speed 1/min: 900

Supply-pump

pressure bar: 4,7...5,3 Overflow quantity at overflow valve:

1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) and speed 1/min: 1050 2nd speed Over flow : 55...138

quantity cm3/10s: (40...153)

Delivery-quant, and breakaway char.:

1/min: 1175 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -

2nd speed 1/min: 1125

Del.quantity cm3/: 37,0...43,0 1000H.: (34,0...46,0) 3rd speed 1/min: 1050 Del.quantity cm3/: 78,5...81,5 1000H.: (77,0...83,0) 4th speed 1/min: 900 Del.quantity cm3/: 83,0...84,0

1000H.: (80,5...86,5) 1/min: 500 5th speed

Del.quantity cm3/: 82,0...90,0 1000H.: (80,0...92,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -

Electr. shutoff:

1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375 Del.quantity cm3/: 22,0..28,0 1000H.: (20,0..30,0)

1/min: 450 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130 Deliquantity cm3/: -1000H: 100,0 ind.

1/min: 200 2nd speed

Del.quantity cm3/: - max. 1000H: 85,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm

: 5,0...5,4 KF mm MS mm

Note inst. in remarks column

: CUM 5.9 P2 Test sheet : 14.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R159-16

Type number : 0 460 426 066

Customer Part-No.: 3 908 214

Customer-specific information

Customer : CDC

: 6 BT 5.9 IND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening.

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness mm: 840 x Length

Start of delivery

mm:0.3Prestroke

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0,02 (0,06)

**Outlet** : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Del.quantity cm3/1000H.: 60.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1.5...2.3 mm: (1.2...2,6) TD travel

1/min: 750 2nd speed

TD travel mm: 3,4...3,8 mm: (2,9...4,3)

1/min: 1100 3rd speed

TD travel mm: 5,2...6,0

mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,5...4,1 pressure

1/min: 1100 3rd speed

D21

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750 Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del.quantity cm3/

1000H.: 73.0...74.0

Dispersion cm3/: 4,0

1000H.: (4,5)

Low-idle speed regulation:

1/min: 360 Speed

Del.quantity cm3/

1000H.: 8,0...14,0 cm3/: 5,5 1000H.: (7,0)

Dispersion

Full-load speed regulation:

1/min: 1300 Speed

Del.quantity cm3/

1000H: 51,0...57,0

Start:

Speed 1/min: 100

Supply-pump pressure bar: 4,8...5,4 Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1250 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1400 Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1390 2nd speed Del.quantity cm3/: 0,0...15,0 1000H.: -1/min: 1350 cm3/: 15,0...55,0 Del.quantity cms/... 3rd speed 1/min: 1300 cm3/: 51\_0...57\_0 4th speed Del.quantity cm3/: 51,0....60,0) 1/min: 1250 5th speed cm3/: 70,0...73,0 Del.quantity 1000H.: (68,5...74,5) 6th speed 1/min: 1100 cm3/: 73<sub>2</sub>0...74<sub>2</sub>0 Del.quantity 1000H.: (70,5...76,5) 1/min: 900 7th speed Del.quantity cm3/: 74,5...78,5 1000H.: -1/min: 750 cm3/: 76,0...80,0 8th speed Del.quantity 1000H: (74,0...82,0) 1/min: 500 9th speed Del.quantity cm3/: 64,0...72,0 1000H: (62,0...74,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 360 ELAB voit: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 360

D22

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation K

K mm : KF mm : 5,0...5,4
MS mm : 0,6...1,0
SVS mux. mm : 1,5
XK mm : 18,8...20,8
XL mm : 11,1...14,5

Note inst. in remarks column

: CUM 5,9 T4 Test sheet Edition : 11.07.89 replaces : 11.86 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-9 : 0 460 426 075 Type number

Customer-specific information

Customer

Engine : 6 BT-5.9 CA

k: 93 Power Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil CC return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0,02(0,04)

Start of delivery block mm: 1,5 Piston stroke

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

D23

1/min: 750

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min : 750 Speed

Del.quantity cm3/

1000H.: 62,0...63,0

cm3/: 4,0 Dispersion 1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Speed Del.quantity cm3/ 1000H.: 10.0...12,0 nispersion cm3/: 5.5 (7.0) 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1150

Deliquantity cm3/

1000H: 39,0...45,0

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 70\_0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,5...2,3 mm: (1,2...2,6)

2nd speed 1/min: 750

TD travel mm: 3,4...3,8

mm: (2,9...4,3)

1/min: 1100 3rd speed

mm: 5,2...6,0 TD travel

mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

2nd speed

Supply-pump bar: 3,5...4,1 pressure 1/min: 1100 3rd speed Supply-pump pressure bar: 4,8...5,4 Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 1100 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1250 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: 1/min: 1200 2nd speed cm3/: 0,0...15<sub>0</sub> Del.quantity 1000H.: -3rd speed 1/min: 1170 Del.quantity cm3/: 15,0...55,0 1000H.: -4th speed 1/min: 1150 cm3/: 39,0...45,0 1000H.: (36,0...48,0) Del.quantity 1/min: 1100 5th speed Del.quantity cm3/: 57.5...60.5 1000H.: (56.0...62.0) 6th speed 1/min: 900 Del.quantity cm3/: 61,5...64,5 1000H.: (59,5...66,5) 1/min: 750 7th speed Del.quantity cm3/: 62,0...63,0 1000H.: (59,5...65,5) 1/min: 500 8th speed Del.quantity cm3/: 57,0...65,0 1000H: -Zero delivery (stop): Mech. shutoff: Speed 1/min: 1100 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery:

Del.quantity cm3/: 10,0..12,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: 
Automatic starting fuel delivery:
1st speed 1/min: 130
Del.quantity cm3/: ind. 1000H: 70,0

2nd speed 1/min: 300

Shutoff electromagnet:

Del.quantity cm3/: -

Cut-in min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

1000H : 70,0

Designation K min KF : 5,0...5,4 min MS : 1,2...1,6 mm : 1.7 SVS max. mm : 18,8...20,8 XK min XL mm 5ر15،،،1ر12 :

Remarks: : C.D.C. # 390 8207

Tractive electromagnet.

1st speed 1/min: 375

Note inst. in remarks column

: CUM 5,9 L2 Test sheet : 11.07.89 Edition replaces : 10.12.86 Calibrating oil : ISO 4113

: VE 6/12F1150 R173-5 Injection pump : 0 460 426 086 Type number

Customer-specific information

Customer : CDC

Engine : 6 BTA - 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,85 Piston stroke

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000

Setting value mm: 1,6,...2,0

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 3,3...3,9

Full-load del. with charge press .:

1/min: 750 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 82.5...83.5 Dispersion cm3/: 4.0 1000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500

Del.quantity cm3/

1000H.: 67,5...68,5

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 9,0...13,0

cm3/: 5,5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1200 Charge press. hPa: 1000

Delaquantity cm3/

1000H: 64,0...70,0

Start:

1/min: 100 Speed Del quantity cm3/1000H.: 70,0 mind '

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed hPa: 1000 Charge press.

mm: 0,5...1,3 TD travel

mm: (0,2...1,6)

1/min: 750 2nd speed Charge press. hPa: 1000 TD travel

mm: 1,6...2,0 mm: (1,1...2,5)

1/min: 1150 3rd speed Charge press. hPa: 1000

D25

nm: 2,8...3,6 8th speed 1/min: 750 Charge press. hPa: 1000
Del.quantity cm3/: 82.5...83.5
1000H: (80.0...86.0)
9th speed 1/min: 700 mm: (2,5...3,9)Supply-pump pressure characteristic: Charge press. hPa: 400
Del.quantity cm3/: 77,5...78,5
1000H: (73,5...82,5) 1/min: 500 1st speed Charge press. hPa: 1000 Supply-pump bar: 2,6...3,2 1/min: 750 1/min: 500 pressure 10th speed 2nd speed Charge press. hPa: 1000 Charge press. hPa: 1000 Del.quantity cm3/: 82,0...90,0 1000H: -Supply-pump bar: 3,3...3,9 pressure 11th speed 1/min: 500 1/min: 1150 3rd speed Charge press. hPa: -Del.quantity cm3/: 67.5...68.5 1000H: (63.5...72.5) Charge press. hPa: 1000 Supply-pump pressure bar: 4,9...5,5 Zero delivery (stop): Overflow quantity at overflow valve: Mech. shutoff: 1/min: 500 1st speed Charge press. hPa: -Speed 1/min: 1150 Oveflow: : 41...83 Del.quantity cm3/: 0..3 quantity cm3/10s: (26...98) 1000H.: -2nd speed 1/min: 1150 Charge press. hPa: 1000 Electr. shutoff: : 55...138 Over flow quantity cm3/10s: (40...153) 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Delivery-quant. and breakaway char .: 1st speed 1/min: 700\* Charge-air pressure-setting Idle delivery: point hPa: 400 Del.quantity cm3/: 77,5...78,5 1000H.: (73,5...82,5) 1st speed 1/min: 375 Del.quantity cm3/: 9,0...13,0 1/min: 1300 1000H.: (6,0...16,0) 2nd speed Charge press. hPa: 1000 1/min: 500 2nd speed Del.quantity cm3/: 0,0...3,0 Del.quantity cm3/: 0,0...4,0 1000H.: -1000H.: -1/min: 1270 3rd speed Charge press. hPa: 1000 Del.quantity cm3/: 0,0...15,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 280 1/min: 1230 4th speed Del.quantity cm3/: -Charge press. hPa: 1000 ind. 1000H: 75,0 Del.quantity cm3/: 15,0...55,0 1000H.: -1/min: 440 2nd speed 1/min: 1200 5th speed Deliquantity cm3/: -1000H: 80,0 Charge press. hPa: 1000 max. Del.quantity cm3/: 64.0...70.0 1000H.: (61.0...73.0) 6th speed 1/min: 1150 Shutoff electromagnet: Charge press. hPa: 1000
Del.quantity cm3/: 76.0...79.0
1000H.: (74.5...80.5)
7th speed 1/min: 900 Cut-in min. voltage : 10,0 Rated voltage : 12,0 Charge press. hPa: 1000 Del.quantity cm3/: 81.0...84.0 1000H.: (79.5...85.5) Mounting and assembly dimensions: Designation

TD travel

K mm : KF mm : 5,0..5,4
MS mm : 1,0..1,4
SVS max. mm : 1,6
XK mm : 18,8..20,8
XL mm : 11,6...15,0

Remarks:

: C.D.C. # 390 4726

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test sheet : CUM 5.9 L9 : 11.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R173-5

: 0 460 426 086 Type number

Customer Part-No. : 3 911 244

Customer-specific information

Customer

: CDC

Engine

: 6 BTA - 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening.

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,85

mm: +-0.02(0.06)

: D Outlet.

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

D28

Charge press. hPa: 1000 Setting value mm: 1,6...2,0

Supply-pump pressure:

1/min: 750 Charge press. hPa: 1000 Setting value bar: 3,3...3,9

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 82,5...83,5

cm3/:4.0Dispersion 1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/

1000H.: 67,5...68,5

Low-idle speed regulation:

Speed 1/min: 375

Delaquantity cm3/

1000H.: 9,0...13,0 cm3/: 5,5 1000H.: (7,0)

Dispersion

Full-load speed regulation:

1/min: 1200 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 64,0...70,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

TD travel mm: 0,5...1,3

mm: (0,2...1,6)

2nd speed 1/min: 750 Charge press. hPa: 1000

TD travel mm:  $1_{-6}$ ...2<sub>0</sub>0 mm: (1,1...2,5)

3rd speed 1/min: 1150

Charge press. hPa: 1000	Del.quantity cm3/: 81_084_0
TD travel mm: 2,83,6	1000H.: (79,585,5)
mm: (2,53,9)	8th speed 1/min: 750
	Charge press. hPa: 1000
Supply-pump pressure characteristic:	Del.quantity cm3/: 82,583,5
Athery bank by occur o our room to con-	1000H: (80,086,0)
1st speed 1/min: 500	9th speed 1/min: 700
Charge press. hPa: 1000	Charge press. hPa: 400
Supply-pump	Del.quantity cm3/: 77,578,5
pressure bar: 2,63,2	1000H: (73,582,5)
2nd speed 1/min: 750	1 10th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: 1000
Supply-pump	Del.quantity cm3/: 82,090,0
Supply-pump pressure bar: 3,33,9	1 1000H: -
3rd speed 1/min: 1150	1 11th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: -
Supply-pump	Del.quantity cm3/: 67,568,5
pressure bar: 4,95,5	1 1000H: (63,572,5)
	100011. (00,511112,5)
Overflow quantity at overflow valve:	Zero delivery (stop):
distribution agreement by the broad from the con-	l
1st speed 1/min: 500	Mech. shutoff:
Charge press. hPa: -	l little and the litt
Oveflow : 4183	Speed 1/min: 1150
quantity cm3/10s: (2698)	Del.quantity cm3/: 03
2nd speed 1/min: 1150	1000H.: -
Charge press. hPa: 1000	100011.
Overflow : 55138	Electr. shutoff:
quantity cm3/10s: (40153)	
quarterty client root. (40111133)	Speed 1/min: 375
Delivery-quant. and breakaway char.:	ELAB volt: -
i i i i i i i i i i i i i i i i i i i	
1st speed 1/min: 700*	Del.quantity cm3/: 0,03,0   max. 1000H.:-
Charge-air pressure-setting !	11100.
point hPa: 400	Idle delivery:
Del.quantity cm3/: 77,578,5	decreery.
1000H.: (73,582,5)	1st speed 1/min: 375
2nd speed 1/min: 1300	Del.quantity cm3/: 9,013,0
Charge press. hPa: 1000	1000H.: (6,016,0)
Del quantity cm3/: 0 0 3 0	2nd speed 1/min: 500
Del.quantity cm3/: 0,03,0   1000H.: -	Del.quantity cm3/: 0,04,0
3rd speed 1/min: 1270	1000H.: -
Charge press. hPa: 1000	100011.
Del. quantity cm3/: 0,015,0	Automatic starting fuel delivery:
1900H.: -	racombete seal eng race (servery)
4th speed 1/min: 1230	1st speed 1/min: 280
Charge press. hPa: 1000	
Del. quantity cm3/: 15,055,0	Del.quantity cm3/: - ind. 1000H: 75,0
1000H.: -	11142 (50011. 15,0
5th speed 1/min: 1200	2nd speed 1/min: 440
Charge press. hPa: 1000	Del.quantity cm3/: -
Del. quantity cm3/: 64,070,0	max. 1000H: 80,0
1000H.: (61,073,0)	max. (OOM . GOD
6th speed 1/min: 1150	Shutoff electromagnet:
Charge press. hPa: 1000	onder etce a magnet.
Del. quantity cm3/: 76,079,0	Cut-in
1000H.: (74,580,5)	min. voltage : 20,0
7th speed 1/min: 900	Rated voltage : 24,0
Charge press. hPa: 1000	nated tottage . Etyl
1 de presse in a. 1000	Mounting and assembly dimensions:
	reserving and assumely dimensions.

Designation K KF K mm : KF mm : 5,0..5,4
MS mm : 1,0..1,4
SVS max. mm : 1,6
XK mm : 18,8...20,8
XL mm : 11,6...15,0

## Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test sheet : CUM 5,9 L7 Edition : 12.07.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1100 R173-7 Injection pump

Type number : 0 460 426 089 Customer Part-No.: 3 910 793

Customer-specific information

Customer : CDC

Engine : 6 BTA - 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electropically: 42...50 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,85 Piston stroke

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

E03

Charge press. hPa: 1000 Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900 Charge press. hPa: 1000 Setting value bar: 4,3...4,9

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 68,5...69,5

Dispersion cm3/:4.01000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/

1000H.: 39,0...40,0

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -Deliquantity cm3/

1000H.: 9,0...13,0 cm3/: 5,5

Dispersion 1000H.: (7,0)

Full-load speed regulation:

1/min: 1140 Speed Charge press. hPa: 1000

Deliquantity cm3/

1000H: 46,0...52,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 60,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 700 1st speed Charge press. hPa: 1000

mm: 0,8...1,6 TD travel mm: (0,5...1,9)

1/min: 900 2nd speed

Charge press. hPa: 1000 TD travel mm: 2,0...2,4

mm: (1,5...2,9)

3rd speed	Charge press. hPa: 1000
Charge press. hPa: 1000	Del.quantity cm3/: 65,568,5
TD travel mm: 2,43,2	1000H.: (64,070,0)
mm: (2,13,5)	8th speed 1/min: 750
Constitution of the second of	Charge press. hPa: 1000
Supply-pump pressure characteristic:	Del.quantity cm3/: 68,569,5
1nt amond 1/win COO	1000H: (66,072,0)
1st speed 1/min: 500	9th speed 1/min: 700
Charge press. hPa: 1000	Charge press. hPa: 1000
Supply-pump	Del.quantity cm3/: 61,562,5
pressure bar: 2,63,2 2nd speed 1/min: 900	1000H: (58,066,0) 1 10th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: 1000
Supply-pump	Del.quantity cm3/: 65,073,0
pressure bar: 4,34,9	1 1000H: -
3rd speed 1/min: 1050	11th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: -
Supp[y-pump	Del.quantity cm3/: 39.040.0
pressure bar: 4,95,5	1000H: (35,43,5)
	-
Overflow quantity at overflow valve:	Zero delivery (stop):
1st speed   1/min: 500	Mech. shutoff:
Charge press. hPa: -	
Oveflow : 4183	Speed 1/min: 1050
quantity cm3/10s: (2698)	Deliquantity cm3/: 03
2nd speed 1/min: 1050 I	1000H.: -
Charge press. hPa: 1000	
Overflow : 55138	Elect. shutoff:
quantity cm3/10s: (40153)	A
Dalivanu-gunt and bacakayay aban .	Speed 1/min: 375
Delivery-quant. and breakaway char.:	ELAB volt: -
1st speed	Del.quantity cm3/: 0,03,0 max. 1000H.: -
Charge-air pressure-setting	max, room, -
point hPa: 400	Idle delivery:
LDA stroke mm: 5,8	idic delivery.
Del.quantity cm3/: 61,562,5	1st speed 1/min: 375
1000H.: (58,066,0)	Del.quantity cm3/: 9,013,0
2nd speed 1/min: 1250	1000H.: (6,016,0)
Charge press. hPa: 1000	2nd speed 1/min: 500
Del.quantity cm3/: 0,03,0	Del.quantity cm3/: 0,04,0
1000H.: -	1000H.: -
3rd speed 1/min: 1200 I	
Charge press. hPa: 1000	Automatic starting fuel delivery:
Del.quantity cm3/: 0,015,0	,
1000H.: -	1st speed
4th speed 1/min: 1160	Charge press. hPa: -
Charge press. hPa: 1000	Del.quantity cm3/: -
Del.quantity cm3/: 15,055,0	ind. 1000H: 60,0
1000H.: -	0.1. 1.4.1.200
5th speed 1/min: 1140	2nd speed 1/min: 240
Charge press. hPa: 1000	Charge press. hPa: -
Deliquantity cm3/: 46,052,0	Del.quantity cm3/: -
1000H.: (43,055,0)	max. 1000H : 60,0
6th speed 1/min: 1050	Shutoff alcatament:
Charge press. hPa: 1000	Shutoff electromagnet:
el.quantity cm3/: 64,567,5   1000H.: (63,069,0)	Cut-in
7th speed 1/min: 900 !	min. voltage : 10,0
a opoda mini 200	min vocage . 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 
KF mm : 5,0..5,4

MS mm : 1,2..1,6

SVS max. mm : 2,4

XK mm : 20,2..22,2

XL mm : 11,2..14,6

## Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

# Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : CUM 5,9 S10 Edition : 14.07.89

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 6/12F1250 R225-14

: 0 460 426 092

Customer-specific information

Customer : CDC

Engine : 6 BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0,02(0,06)

Outlet :

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

E06

Supply-pump pressure:

1/min: 750 Speed

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del.quantity cm3/

1000H.: 63,5...64,5

Low-idle speed regulation:

Speed 1/min: 345

Del.quantity cm3/ 1000H.: 9,0...15,0

Full-load speed regulation:

Speed 1/min: 1320

Deliquantity cm3/

1000H: 44,5...50,5

Start:

Speed 1/min: 100

Deliquantity mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel

mm: 1,5...2,3 mm: (1,2...2,6) 1/min: 750

2nd speed

TD travel mm: 3,4...3,8

mm: (2,9...4,3)

3rd speed 1/min: 1100

TD travel mm: 5,2...6,0

mm: (4,9...6,3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 pressure

1/min: 750 2nd speed

Supply-pump

bar: 3,5...4,1 1/min: 1100 pressure

3rd speed

Supply-pump

bar: 4,9...5,5 pressure

Overflow quantity at overflow valve:

1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 1250 2nd speed : 55...138 Over flow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1450 1st speed Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1380 Del.quantity cm3/: 0,0...15,0 1000H.: -1/min: 1330 3rd speed Del.quantity cm3/: 15,0...55,0 1090H.: -4th speed 1/min: 1320 Del.quantity cm3/: 44,5...50,5 1000H.: (41,5...53,5) 5th speed 1/min: 1250 Del.quantity cm3/: 60,8...63,8 1000H.: (59,3...65,3) 1/min: 1100 6th speed Del.quantity cm3/: 63.5...64.5 1000H.: (61.0...67.0) 1/min: 750 7th speed Del.quantity cm3/: 64,0...68,0 1000H.: (62,0...70,0) 1/min: 500 8th speed Del.quantity cm3/: 65,0...73,0 1000H: (63.0...75.0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 345 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1st speed 1/min: 345 Del.quantity cm3/: 9.0...15.0 1000H.: (7.0...17.0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,0...4,0 1000H .: -

Automatic starting fuel delivery:

1st speed 1/min: 270
Del.quantity cm3/: ind. 1000H: 55,0

2nd speed 1/min: 450 Del.quantity cm3/: max. 1000H: 75,0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,1...5,4
MS mm : 1,3..1,55
SVS max. mm : 1,2
XK mm : 20,2...22,2
XL mm : 10,8...14,2

Remarks:

: C.D.C. # 391 0791

Note inst. in remarks column

Test sheet : CUM 5.9 S9 Edition : 14.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R225-14

Type number : 0 460 426 092 Customer Part-No.: 3 910 791

Customer-specific information

Customer

: 6 BT Engine

TEST BENCH REQUIREMENTS

Calibrating-oil oC return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

**E08** 

Setting value mm: 3,4...3,8

Supply-pump pressure:

1/min: 750 Speed

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min: 1100

Del.quantity cm3/

1000H.: 63,5...64,5

Low-idle speed regulation:

1/min: 345 Speed

Del.quantity cm3/

1000H.: 9,0...15,0

Full-load speed regulation:

1/min: 1320 Speed

Deliquantity cm3/

1000H: 44,5...50,5

Start:

Speed 1/min: 100

Del.quantity

cm3/1000H.: 60.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel mm: 1,5...2,3 mm: (1,2...2,6)

1/min: 750 2nd speed

mm: 3,4...3,8 TD travel

mm: (2,9...4,3)

3rd speed 1/min: 1100

TD travel mm: 5,2...6,0

mm: (4.9...6.3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,5...4,1 pressure

1/min: 1100 3rd speed

Supply-pump

bar: 4,9...5,5 pressure

Overflow quantity at overflow valve:

1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1250 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant, and breakaway char.: 1st speed 1/min: 1450 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1380 Del.quantity cm3/: 0,0...15,0 1000H .: -3rd speed 1/min: 1330 cm3/: 15,0...55,0 Del.quantity 1000H.: -1/min: 1320 4th speed Del.quantity cm3/: 44.5...50.5 1000H.: (41.5...53,5) 5th speed 1/min: 1250 Del.quantity cm3/: 60,8...63,8 1000H.: (59,3...65,3) 1/min: 1100 6th speed Del.quantity cm3/: 63,5...64,5 1000H.: (61,0...67,0) 1/min: 750 7th speed Del.quantity cm3/: 64,0...68,0 1000H.: (62,0...70,0) 8th speed 1/min: 500 Del.quantity cm3/: 65,0...73,0 1000H: (63,0...75,0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/miri: 345 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1st speed 1/min: 345 Del.quantity cm3/: 9,0...15.0 1000H.: (7,0...17,0) 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -

Automatic starting fuel delivery:

E09

1st speed 1/min: 270
Del.quantity cm3/: 1000H: 55,0

2nd speed 1/min: 450
Del.quantity cm3/: max. 1000H: 75,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,1...5,4
MS mm : 1,3..1,55
SVS max. mm : 1,2
XK mm : 20,2...22,2

mm: 10,8...14,2

Remarks:

XL

Note inst. in remarks column

: CUM 5,9 L5 Test sheet Edition : 11.07.89 replaces : 04.11.87 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R173-9

: 0 460 426 102 Type number

Customer-specific information Customer : CUMMINS

: 6 BTA -590 IND. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening.

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,85

mm: +-0,02(0,06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1,3...1,7

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 84,5...85,5

cm3/:4.0Dispersion 1000H: (4.5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/ 1000H.: 68,5...69,5

Low-idle speed regulation:

1/min: 375 Speed Charge press. hPa: -Deliquantity cm3/

1000H.: 8,0...14,0

cm3/: 5,5 Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1300 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 59,0...65,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1900H.: 70.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0,4...1,2

mm: (0,1...1.5) 2nd speed 1/min: 750 Charge press. hPa: 1000
TD travel mm: 1.3...1.7
mm: (0.8...2.2)

3rd speed 1/min: 1050

E10

Del.quantity cm3/: 80,5...83,5 1000H.: (78,5...85,5) Charge press. hPa: 1000 mm: 2,0...2,8 TD travel 1/min: 750 mm: (1,7...3,1)8th speed Charge press. hPa: 1000 Del.quantity cm3/: 84,5...85,5 1000H: (82,0...88,0) 9th speed 1/min: 700 Supply-pump pressure characteristic: 1/min: 500 1st speed Charge press. hPa: 400 Del.quantity cm3/: 77.5...78.5 Charge press. hPa: 1000 Supply-pump bar: 2,2...2,8 1/min: 750 pressure 1000H: (74,0...82,0) 2nd speed 1/min: 500 10th speed Charge press. hPa: 1000 Charge press. hPa: 1000 Supply-pump Del.quantity cm3/: 84,0...92,0 bar: 3,2...3,8 1000H: pressure 3rd speed 1/min: 1050 11th speed 1/min: 500 Charge press. hPa: Del.quantity cm3/: 68.5...69.5
1000H: (65.0...73.0) Charge press. hPa: 1000 Supply-pump bar: 4,5...5,1 pressure Overflow quantity at overflow valve: Zero delivery (stop): 1/min: 500 1st speed Mech. shutoff: Charge press. hPa: -Oveflow | : 41...83 Speed 1/min: 1250 quantity cm3/10s: (26...98) Del.quantity cm3/: 0...3 2nd speed 1/min: 1250 1000H.: -Charge press. hPa: 1000 Overflow : 55... : 55...138 Electr. shutoff: quantity cm3/10s: (40...153) Speed 1/min: 375 volt: -Delivery-quant. and breakaway char.: ELAB Del.quantity cm3/: 0,0...3,0 1000H.: -1st speed 1/min: 700\* max. Charge-air pressure-setting hPa: 400 Idle delivery: Del.quantity cm3/: 77,5...78,5 1000H.: (74,0...82,0) 2nd speed 1/min: 1400 1st speed 1/min: 375
Del.quantity cm3/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500 Charge press. hPa: 1000 Del.quantity cm3/: 0,0...3,0 1000H.: -Del.quantity cm3/: 0,0...4,0 1000H.: -1/min: 1370 3rd speed Charge press. hPa: 1000 Del.quantity cm3/: 0,0...15,0 Automatic starting fuel delivery: 1/min: 1330 4th speed 1/min: 250 1st speed Charge press. hPa: 1000 Del.quantity cm3/: -Del.quantity cm3/: 15,0...55,0 1000H.: -1000H: 70,0 ind. 1/min: 1300 5th speed 2nd speed 1/min: 450 Charge press. hPa: 1000 Del.quantity cm3/: 59.0...65.0 1000H: (56.0...68.0) Del.quantity cm3/: - max. 1000H: 88,0 1/min: 1250 6th speed Shutoff electromagnet: Charge press. hPa: 1000 Del.quantity cm3/: 76,0...79,0 Cut-in 1000H.: (74,5...80,5) min. voltage : 10,0 Rated voltage : 12,0 1/min: 1050 7th speed Charge press. hPa: 1000 Mounting and assembly dimensions:

Designation K KF K mm : 
KF mm : 5,0..5,4

MS mm : 1,0..1,4

SVS max. mm : 2,3

XK mm : 18,8...20,8

XL mm : 13,8...17,2

Remarks:

: C.D.C. # 390 8219

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test sheet : CUM 5,9 L6 : 11.07.89 Edition

replaces

Calibrating oil : ISO 4113

: VE 6/12F1250 R173-9 Injection pump

Type number : 0 460 426 102

Customer Part-No.: 3 907 643

Customer-specific information Customer : CUMMINS

: 6 BTA -590 IND. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,85

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

E13

Charge press. hPa: 1000 Setting value mm: 1,3...1,7

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 3,2...3,8

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 84,5...85,5

cm3/: 4.0 1000H: (4,5) Dispersion

Full-load del. w/out charge press.:

Speed 1/min : 500

Deliquantity cm3/

1000H.: 68,5...69,5

Low-idle speed regulation:

Speed 1/min: 375 Charge press. hPa: -

Deliquantity cm3/

1000н.: 8,0...14,0

cm3/: 5,5 Dispersion 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300 Charge press. hPa: 1000

Deliquantity cm3/

1000H: 59\_0...65\_0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000 TD travel

mm: 0,4...1,2

mm: (0,1...1,5) 1/min: 750 2nd speed

Charge press. hPa: 1000 TD travel mm: 1,3...1,7 mm: (0,8...2,2)

3rd speed 1/min: 1050   Charge press. hPa: 1000	Del.quantity cm3/: 80,583,5 1000H.: (78,585,5)
TD travel mm: 2,02,8   mm: (1,73,1)	8th speed 1/min: 750 Charge press. hPa: 1000
Supply-pump pressure characteristic:	Del.quantity cm3/: 84,585,5 1000H: (82,088,0) 9th speed 1/min: 700
1st speed 1/min: 500	Charge press. hPa: 400
Charge press. hPa: 1000	Del. quantity cm3/: 77,578,5
Supply-pump 1	1000H: (74,082,0)
pressure bar: 2,22,8	10th speed 1/min: 500
2nd speed 1/min: 750	Charge press. hPa: 1000
Charge press. hPa: 1000	Del.quantity cm3/: 84,092,0
Supply-pump	1000H: -
Supply-pump   pressure bar: 3,23,8   Srd speed 1/min: 1050	11th speed 1/min: 500
3rd speed 1/min: 1050	Charge press. hPa: -
Charge press. hPa: 1000	Del.quantity cm3/: 68,569,5
Supp ly-pump 1	1000H: (65,073,0)
pressure bar: 4,55,1	
	Zero delivery (stop):
Overflow quantity at overflow valve:	
1	Mech. shutoff:
1st speed	
Charge press. hPa: -	Speed 1/min: 1250
Oveflow : 4183	Del.quantity cm3/: 03
quantity cm3/10s: (2698)	1000H.: -
2nd speed 1/min: 1250	
Charge press. hPa: 1000	Electr. shutoff:
Overflow : 55138	
quantity cm3/10s: (40153)	Speed 1/min: 375
	ELAB volt: -
Delivery-quant. and breakaway char.:	Del.quantity cm3/: 0,03,0
	max. 1000H.: -
1st speed 1/min: 700*	
Charge-air pressure-setting	Idle delivery:
point hPa: 400	
Deliquantity cm3/: 77,578,5	1st speed 1/min: 375
1000H.: (74,082,0)	Del. uantity cm3/: 8,014,0
2nd speed 1/min: 1400	1000H.: (6,016,0)
Charge press. hPa: 1000	2nd speed 1/min: 500
Del.quantity cm3/: 0,03,0	Del.quantity cm3/: 0,04,0
1000H.: -	1000H.: -
3rd speed 1/min: 1370	
Charge press. hPa: 1000	Automatic starting fuel delivery:
Deliquantity cm3/: 0,015,0	•
1000H.: -	1st speed 1/min: 250
4th speed 1/min: 1330	Del.quantity cm3/: -
Charge press. hPa: 1000	ind. 1000H: 70,0
Deliquantity cm3/: 15,055,0	•
1000H.: -	2nd speed 1/min: 450
5th speed 1/min: 1300	Del.quantity cm3/: -
Charge press. hPa: 1000	max. 1000H: 88,0
Deliquantity cm3/: 59,065,0	
1000H.: (56,068,0)	Shutoff electromagnet:
6th speed 1/min: 1250	
Charge press. hPa: 1000	Cut-in
Del.quantity cm3/: 76,079,0	min. voltage : 20,0
1000H.: (74,580,5)	Rated voltage : 24,0
7th speed 1/min: 1050	
Charge press. hPa: 1000	Mounting and assembly dimensions:
3. L. 4444 444	The state of the s

Designation K mm : mm : 5,0...5,4 min : 1,0...1,4 mm : 2,0 mm : 18,8...20,8 mm : 13,8...17,2 KF MS SVS max. XΚ XL

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

:

Note inst. in remarks column

Test sheet : CUM 5,9 U40 : 12.07.89 Edition

replaces

: ISO 4113

Calibrating oil

Injection pump : VE 6/12F1250 R367

Type number : 0 460 426 137

Customer-specific information

Customer : CDC

Engine : 6 BT-5,9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening.

bar: 250...253 pressure

Perforated plate

diameter mm : 0.5

Test in j. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke 3 mm : 0

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0,02 (0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 850 Speed

Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1100 Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

1/min : 1100 Speed

Del.quantity cm3/

1000H.: 56,5...57,5

cm3/: 4.0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Deliquantity cm3/

1000H.: 8,0...14,0

cm3/: 5,5 Dispersion

1000H.: (7,0)

Full-load speed regulation:

1/min: 1450 Speed

Deliquantity cm3/

1000H: 37,0...43,0

Start.

1/min: 100 Speed

Del.quantity

mind cm3/1000H.: 50.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

mm: 1,5...2,3 TD travel

mm: (1,2...2,6)

1/min: 850 2nd speed

mm: 3,8...4,2 mm: (3,3...4,7) TD travel

1/min: 1100 3rd speed

TD travel

mm: 5,4...6,2 mm: (5,1...6,5)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,5...3,1 pressure

2nd speed 1/min: 1100

Supply-pump

bar: 3,9...4,5 1/min: 1400 pressure

3rd speed

E16

Supply-pump pressure bar: 4,9...5 Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 1400 2nd speed Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1st speed 1/min: 1580 Del.quantity cm3/: 0,0...3,01000H.: -2nd speed 1/min: 1530 Del.quantity cm3/: 0,0...15,0 1000H.: -3rd speed 1/min: 1490 Del.quantity cm3/: 15,0...55,0 1000H.: 1/min: T450 4th speed cm3/: 37,0...43,0 Del.quantity 1000H.: (34,0...46,0) 5th speed 1/min: 1400 cm3/: 53,5...56,5 1000H.: (52,0...58,0) Del.quantity 1/min: 1100 6th speed cm3/: 56,5...57,5 1000H.: (54,0...60,0) Del.quantity 1/min: 850 7th speed cm3/: 52,5...56,5 Del.quantity 1000H.: (50,5...58,5) 1/min: 500 8th speed Del.quantity cm3/: 39,0...47,0 1000H: (37,0...49,0) Zero delivery (stop): Mech. shutoff: 1/min: 1400 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del. quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 60,0

1/min: 400

1000H: 60.0

Shutoff electromagnet:

Del.quantity cm3/: -

2nd speed

Cut-in min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation mm KF : 5,0...5,4 mm MS : 1,3...1,7 mm SVS max. min ΧK : 18,8...20,8 mm XL : 9,6...13,0 mm

Remarks: : C.D.C. # 391 7542

E17

2nd speed

1/min: 450

: CUM 5,9 U35 Test sheet Edition : 10.07.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1000 R369

Type number : 0 460 426 138

Customer-specific information

Customer : CDC

Engine : 6BT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press. bar : 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar: 250...253

Perforated-plate

diameter mm:0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 x Length mm: 840

Start of delivery

mm: 0,3 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0,02(0,06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,0...3,4

Note inst. in remarks column

1/min: 750 Setting value bar: 3,3...3,9

Full-load del. w/out charge press.:

Speed 1/min: 850

Supply-pump pressure:

Del.quantity cm3/

1000H.: 63,0...64,0

cm3/: 4.0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 450 Del.quantity cm3/ 1000H.: 4,0...10,0

cm3/: 5.5 1000H.: (7.0) Dispersion

Full-load speed regulation:

1/min: 1040

Del quantity cm3/

1000H: 53,0...59,0

Start.

1/min: 100 Speed Del.quantity

mind cm3/1000H.: 60,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1,2...2,0 mm: (0,9...2,3) 1/min: 750

2nd speed

TD travel mm: 3.0...3.4 mm: (2.5...3.9)

3rd speed 1/min: 1000

TD travel mm: 4,6...5,4

mm: (4,3...5,7)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,3...2,9 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3,3...3,9 pressure

1/min: 1000 3rd speed

Supply-pump bar: 4,5...5,1 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1000 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1120 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 1100 Del.quantity cm3/: 0,0...15,0 1000H.: -3rd speed 1/min: 1060 Del.quantity cm3/: 15,0...45,0 1000H.: -4th speed 1/min: 1040 Del.quantity cm3/: 53,0...59.0 1000H.: (50,0...62,0) 5th speed 1/min: 1000 Del.quantity cm3/: 61,0...64,0 1000H.: (59,5...65,5) 1/min: 850 6th speed Del.quantity cm3/: 63,0...64,0 1000H.: (60,5...66,5) 1/min: 750 7th speed Del.quantity cm3/: 61.5...65.5 1000H.: (59.5...67.5) 8th speed 1/min: 500 Del.quantity cm3/: 37,5...45,5 1000H: (35,5...47,5) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1000 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 450 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1/min: 450 1st speed Del.quantity cm3/: 4,0...10,0 1000H.: (2,0...12,0) 1/min: 500

Del.quantity cm3/: 0,0...4,0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: ind. 1000H: 60,0 2nd speed 1/min: 240 Del.quantity cm3/: -1000H: 60,0 max. Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation K min KF : 5,0...5,4 mm MS : 0,8...1.2 min XK : 18,8...20,8 mm XL. : 9,9...13,3 mm Remarks:

2nd speed

Note inst. in remarks column

: CUM 5,9 U39 Test sheet Edition : 12.07.89

replaces

Calibrating oil : ISO 4113

: VE 6/12F1250 R372 Injection pump

: 0 460 426 141 Type number

Customer-specific information

Customer

Engine : 6 BT-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke tram : 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,3

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

E20

Supply-pump pressure:

Speed 1/min: 750 Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 1100

Deliquantity cm3/

1000H.: 73,0...74,0

cm3/: 4,0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 360

Del.quantity cm3/

1000H.: 8,0...14,0 cm3/: 5,5

Dispersion

1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300

Del.quantity cm3/

1000H: 51,0...57,0

Start.

Speed 1/min: 100

Del.quantity

mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel mm: 1,5...2,3

mm: (1,2...2,6) 1/min: 750

2nd speed TD travel mm: 3,4...3,8

mm: (2,9...4,3)

1/min: 1100 3rd speed

TD travel mm: 5,2...6,0

mm: (4.9...6.3)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

pressure

bar: 2,4...3,0 1/min: 750

2nd speed

Supply-pump

bar: 3,5...4,1 1/min: 1100 pressure

3rd speed

Supply-pump bar: 4.8...5.4 pressure Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 1250 2nd speed : 55...138 Over flow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1400 Del.quantity cm3/: 0,0...3,0 1000H.: -1/min: 1390 2nd speed Del.quantity cm3/: 0,0...15,0 1000H.: -1/min: 1350 3rd speed Del.quantity cm3/: 15,0...55,0 1000H.: -4th speed 1/min: 1300 Del.quantity cm3/: 51.0...57.0 1000H.: (48.0...60.0) 5th speed 1/min: 1250 Del.quantity cm3/: 70,0...73,0 1000H.: (68,5...74,5) 1/min: 1100 6th speed Del.quantity cm3/: 73,0...74,0 1000H.: (70,5...76,5) 1/min: 900 7th speed Del.quantity cm3/: 74,5...78,5 1000H.: -1/min: 750 cm3/: 76,0...80,0 1000H: (74,0...82,0) 1/min: 500 8th speed Del.quantity 9th speed Del.quantity cm3/: 64,0...72,0 1000H: (62,0...74,0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1250 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 360 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery:

1st speed

E21

1/min: 360

Del.quantity cm3/: 8,0...14,0 1000H.: (6,0...16,0)

Automatic starting fuel delivery:

1st speed 1/min: 130 Del.quantity cm3/: ind. 1000H: 70,0

2nd speed 1/min: 240 Del.quantity cm3/: max. 1000H: 70,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,0...5,4
MS mm : 0,6...1,0
SVS max. mm : -

XK mm : 18,8...20,8 XL mm : 11,1...14,5

Remarks:

: C.D.C. # 391 6947

Note inst. in remarks column

: CUM 5,9 U38 Test sheet Edition : 12.07.89

replaces

: ISO 4113 Calibrating oil

Injection pump : VE 6/12F1100 R225-23

Type number : 0 460 426 143

Customer-specific information

Customer

: 6 BT -5,9 IN Engine

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,3

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

E22

Supply-pump pressure:

Speed 1/min: 750

Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900

Del.quantity cm3/

1000H.: 71,5...72,5

cm3/: 4,0 Dispersion

1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375

Delouantity cm3/

1000H.: 8.0...14,00 cm3/: 5.5 1000H.: (7,0) Dispersion

Full-load speed regulation:

Speed 1/min: 1190

Del.quantity cm3/

1000H: 50,0...56,0

Start.

1/min: 100 Speed

Del.quantity

mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 500 1st speed

TD travel mm: 1,5...2,3

mm: (1,2...2,6)

2nd speed 1/min: 750

TD travel nm: 3, 4, ... 3, 8

mm: (2,9...4,3)

1/min: 1100 3rd speed

TD travel

mm: 5,5...6,3 mm: (5,2...6,5)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2,4...3,0 pressure

1/min: 750 2nd speed

Supply-pump

pressure bar: 3,5...4,1

1/min: 1100 3rd speed

Supply-pump pressure bar: 4,8...5,4 Overflow quantity at overflow valve: 1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity | 2nd speed 1/min: 1150 : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 1300 Del.quantity cm3/: 0,0...3,0 1000H .: -2nd speed 1/min: 1260 Del.quantity cm3/: 0,0...15,0 1900H.: -1/min: 1220 3rd speed cm3/: 15,0...55,0 Del.quantity 1000H.: -4th speed 1/min: 1190
Del.quantity cm3/: 50,0...56,0
1000H.: (47,0...60,0) 5th speed 1/min: 1150 Del.quantity cm3/: 66,5...69,5 1000H.: (65,0...71,0) 1/min: 900 6th speed Del.quantity cm3/: 71,5...72,5 1000H.: (69,0...75,0) 7th speed 1/min: 500 Del.quantity cm3/: 58,0...66,0 1000H.: -Zero delivery (stop): Mech. shutoff: 1/min: 375 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 375 1st speed

Del.quantity cm3/: 8,0...14,0

Del.quantity cm3/: 0,0...4,0 1000H.: -

1/min: 450

1900H.: (6,0...16,0)

max. ĸ KF MS XK XL

Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 70,0 ind. 2nd speed 1/min: 240 Del.quantity cm3/: -1000H : 60,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation mm : 5,0...5,4 mm : 0,8...1.2 mn SVS max. mm : 20,2...22,2 mm : 11,5...14,9 mm Remarks: : C.D.C. # 391 6949

2nd speed

Note inst. in remarks column

Test sheet : CUM 5.9 U36 : 10.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R373-2

Type number : 0 460 426 145

Customer-specific information

Customer : CDC

Engine : 6 BTA 5,9L

Power k: 127 Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm : 0,3 Prestroke

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,85

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

E24

Speed 1/min: 750 Charge press. hPa: 1000

Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Charge press. hPa: 1000 Setting value bar: 2,9...3,5

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H.: 94,5...95,5

Dispersion cm3/:4.0

1000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/

1000H.: 50,5...51,5

cm3/: 9,0 Dispersion

1000H.: -

Low-ille speed regulation:

1/min: 375 Speed Charge press. hPa: -

Charge press. ....Del.quantity cm3/ 1000H.: 8,0...12,0 Dispersion cm3/: 5,5

1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1100 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 73,0...79,0

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity mind cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0,51,3	
mm: (0,21.6)	Del.quantity cm3/: 73,079,0 1000H.: (70,082,0)
2nd chand 1/min 750	6th annual 1/22 1000
2nd speed 1/min: 750	6th speed 1/min: 1050
Charge press. hPa: 1000	Charge press. hPa: 1000
10 travel mm: 1,51,9	Del.quantity cm3/: 83,586,5
TD travel mm: 1.51.9   mm: (1.02.4)	1000H.: (82,088,0)
3rd speed 1/min: 1050	7th speed 1/min: 900
Charge press. hPa: 1000	Charge press. hPa: 1000
TD travel mm: 2,53,3	Del.quantity cm3/: 87,590,5
mm: (2,23,6)	1000H.: (86,092,0)
Hall - Local a Doll	
Complete and a management of the complete trade of trade of the complete trade of	8th speed 1/min: 750
Supply-pump pressure characteristic:	Charge press. hPa: 1000
	Del.quantity cm3/: 94,595,5
1st speed 1/min: 500	1000H: (92,098,0)
Charge press. hPa: 1000	9th speed 1/min: 700
Supp (y-pump	Charge press. hPa: 300
pressure bar: 1,82,4	Del.quantity cm3/: 79,580,5
2nd speed 1/min: 750	1000H: (75,584,5)
Charge press. hPa: 1000	10th speed 1/min: 500
Stanty-numn	Chases abose blas 1000
Supply-pump pressure bar: 2,93,5	Charge press. hPa: 1000
7nd annual 4 (wine 4000	Del.quantity cm3/: 98,0106,0
3rd speed 1/min: 1050	1000H: -
Charge press. hPa: 1000	11th speed 1/min: 500
Supply-pump!	Charge press. hPa: -
pressure bar: 4,34,9	Del.quantity cm3/: 50,551,5
	1000H: (46,555,5)
Overflow quantity at overflow valve:	
	Zero delivery (stop):
1st speed 1/min: 500	2010 de 11101 y 10 copi .
Charge press. hPa: -	Mech. shutoff:
	recii. Sildcott.
	Second 4 /wine 1050
quantity cm3/10s: (2698)	Speed 1/min: 1050
2nd speed 1/min: 1050	Del.quantity cm3/: 03
Change hDc: 4000	40001
Charge press. hPa: 1000	1000H.: -
Overflow : 55138	1000H.: ~
	1000H.: - Electr. shutoff:
Overflow : 55138   quantity cm3/10s: (40153)	1900H.: - Electr. shutoff:
Overflow : 55138	1900H.: -  Electr. shutoff:  Speed 1/min: 375
Overflow: 55138   quantity cm3/10s: (40153)   Delivery-quant. and breakaway char.:	1900H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -
Overflow : 55138   quantity cm3/10s: (40153)	1900H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0
Overflow: 55138   quantity cm3/10s: (40153)   Delivery-quant. and breakaway char.:   1st speed 1/min: 700*	1900H.: -  Electr. shutoff:  Speed 1/min: 375
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:	1900H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300	1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0  max. 1000H.: -
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3	1900H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 700*  Charge-air pressure-setting point hPa: 300  LDA stroke mm: 7.3  Del. quantity cm3/: 79.580.5	Idle delivery:
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5)	1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0  max. 1000H.: -  Idle delivery:  1st speed 1/min: 375
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 700*  Charge-air pressure-setting point hPa: 300  LDA stroke mm: 7.3  Del.quantity cm3/: 79.580.5  1000H.: (75.584.5)  2nd speed 1/min: 1200	In the second se
Overflow: 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char::  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5) 2nd speed 1/min: 1200 Charge press. hPa: 1000	In the second se
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700*  Charge-air pressure-setting point hPa: 300  LDA stroke mm: 7.3  Del.quantity cm3/: 79.580.5 1000H.: (75.584,5)  2nd speed 1/min: 1200  Charge press. hPa: 1000  Del.quantity cm3/: 0,03,0	1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0  max. 1000H.: -  Idle delivery:  1st speed 1/min: 375  Del.quantity cm3/: 8,012,0  1000H.: (5,015,0)  2nd speed 1/min: 500
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79,580,5 1000H.: (75,584,5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,33,0 1000H.: -	In the second se
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5 1000H.: (75.584.5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.33.0 1000H.: - 3rd speed 1/min: 1170	1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: -  Del.quantity cm3/: 0,03,0  max. 1000H.: -  Idle delivery:  1st speed 1/min: 375  Del.quantity cm3/: 8,012,0  1000H.: (5,015,0)  2nd speed 1/min: 500
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79,580,5 1000H.: (75,584,5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1170 Charge press. hPa: 1000	1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300  LDA stroke mm: 7,3 Del.quantity cm3/: 79,580,5 1000H.: (75,584,5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0	In the second se
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79,580,5  1000H.: (75,584,5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0  1000H.:  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0 1000H.: -	Indextool 1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -  Automatic starting fuel delivery:
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5  1000H.: (75.584.5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0  1000H.: -  4th speed 1/min: 1140	1000H.: -  Electr. shutoff:  Speed 1/min: 375  ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5  1000H.: (75.584.5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0  1000H.: -  4th speed 1/min: 1140	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5  1000H.: (75.584.5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0 1000H.: -  4th speed 1/min: 1140 Charge press. hPa: 1000	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1090H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250 Charge press. hPa: -
Overflow : 55138     quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting     point	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: -
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5  1000H.: (75.584.5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0  1000H.: -  4th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0  1000H.: -	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1090H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250 Charge press. hPa: -
Overflow quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79,580,5  1000H.: (75,584,5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0  1000H.: -  4th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0  1000H.: -  5th speed 1/min: 1100	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45,0
Overflow : 55138 quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7.3 Del.quantity cm3/: 79.580.5  1000H.: (75.584.5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0  1000H.: -  4th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0  1000H.: -	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45,0  2nd speed 1/min: 450
Overflow quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 700* Charge-air pressure-setting point hPa: 300 LDA stroke mm: 7,3 Del.quantity cm3/: 79,580,5  1000H.: (75,584,5)  2nd speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0  1000H.: -  3rd speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 0,015,0  1000H.: -  4th speed 1/min: 1140 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0  1000H.: -  5th speed 1/min: 1100	Electr. shutoff:  Speed 1/min: 375 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -  Idle delivery:  1st speed 1/min: 375 Del.quantity cm3/: 8,012,0 1000H.: (5,015,0) 2nd speed 1/min: 500 Del.quantity cm3/: 0,04,0 1000H.: -  Automatic starting fuel delivery:  1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 45,0

Del.quantity cm3/: - max. 1000H: 55,0

## Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

## Mounting and assembly dimensions:

Designation

K KF mm: -

mm : 5,0...5,4 mm : 1,2...1,6 mm : 1,2 mm : 21,8...23,8 mm : 13,8...17,2 MS SVS max. XK XL

Remarks:

\* Correction at adjusting nut (46) 00

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test sheet : VWW 1,9 A Edition : 19.07.89

replaces

Calibrating oil : ISO 4113

: VE 4/ 8F2200 R337 Injection pump

: 0 460 484 022 Type number

Customer-specific information

Customer

: 086 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 3,1...3,5

Supply-pump pressure:

1/min: 1250 Setting value bar: 5,5...6,1

Full-load del. w/out charge press.:

1/min : 1250 Speed

Del.quantity cm3/

1000H.: 35,5...36,5

cm3/: 2,0 Dispersion 1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 450

Speed Del.quantity cm3/ 1000H.: 7,0...9,0 cm3/: 2,0 Dispersion 1000H.: (3,0)

Residual-Delivery Setting 1/min: 575

Speed Del.quantity cm3/

1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2525

Del.quantity cm3/

1000H: 10,0...14,0

Start:

Speed 1/min: 100

Del.quantity

mind cm3/1000H.: 35,0

Load-dependent start of delivery:

1/min: 1250 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

TD travel mm: 1,1...1,9 mm: (0,8...2,2)

1/min: 1250 2nd speed

TD travel mm: 3,1...3,5

mm: (2,6...4,0)

3rd speed 1/min: 2200

mm: 7,1...7,9 mm: (6,8...8,2) TD travel

Supply-pump pressure characteristic:

1/min: 750 1st speed

Supply-pump

bar: 4,3...4,9 pressure

1/min: 1250 2nd speed

Supply-pump

bar: 5,5...6,1 pressure

1/min: 2200 3rd speed

Supply-pump pressure bar: 7,7...8,3 Overflow quantity at overflow valve: 1st speed 1/min: 750 : 41...83 Oveflow quantity cm3/10s: (26...98) 2nd speed 1/min: 2200 : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant, and breakaway char.: 1st speed 1/min: 2700 Del.quantity cm3/: 0,0...6,0 1000H.: -1/min: 2525 2nd speed Del.quantity cm3/: 10,0...14,0 1000H.: (8,0...16,0) 1/min: 2425 3rd speed Del.quantity cm3/: 18,0...28,0 1000H.: (17,0...29,0) 1/min: 2200 4th speed Del.quantity cm3/: 31,0...33,0 1000H.: (29,8...34,2) 1/min: 1250 5th speed Del.quantity cm3/: 35,5...36,5 1000H.: (33,8...38,2) 6th speed 1/min: 750 Del.quantity cm3/: 30,0...33,0 1000H.: (28,5...34,5) 1/min: 500 7th speed Del.quantity cm3/: 27.5...32.5 1000H.: (25.0...35.0) Zero delivery (stop): Electr. shutoff: Speed ELAB 1/min: 450 volt: -Del.quantity cm3/: 0,0...3,0 Idle delivery: 1st speed 1/min: 450 Del.quantity cm3/: 7,0...9,0 1000H.: (4,0...12,0) High Idle: 1/min: 525 cm3/: 7,0...9,0 Speed Del.quantity cm3/: /,U...7,0 1000H.: (4,0...12,0) Residual:

1/min: 525

Speed

£28

Del.quantity : 2,5...4,5 1000H.: (1,0...6,0)

Automatic starting fuel delivery:

1st speed 1/min: 180 Del.quantity cm3/: ind. 1000H: 35,0

2nd speed 1/min: 380 Del.quantity cm3/: max. 1000H: 38,0

Shutoff electromagnet:

Cut-in min. voltage

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
KF mm : 5,1...5,5
MS mm : 1,1...1,5
XK mm : 20,0...22,0
XL mm : 9,7...13,1

Remarks:

Note inst. in remarks column

Test sheet : PEU 1,9 K2 : 14.07.89 Edition replaces : 04.11.87 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R162-4

Customer Part-No.: 0 460 494 224

Customer-specific information Customer : PEUGEOT

Engine : XUD9

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 4,0...4,4

Supply-pump pressure:

1/min: 1250 Setting value bar: 4,2...4,8

full-load del. w/out charge press.:

Speed 1/min : 1250

Del.quantity cm3/

1000H.: 28,0...29,0 cm3/: 2,5

Dispersion

1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 7.0...9,0 Dispersion

cm3/: 2,5 1000H.: (3,0)

Residual-Delivery Setting 1/min: 550 Speed

Del.quantity cm3/

1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2440

Del.quantity cm3/

1000H: 20,0...26,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 64,0 mind

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

mm: 1,5...2,3 mm: (1,2...2,6) 1/min: 1250 TD travel

2nd speed TD travel

mm: 4.0...4.4 mm: (3.5...4.9)

1/min: 2000

3rd speed TD travel

mm: 7,6...8,4 mm: (7,3...8,7)

Supply-pump pressure characteristic:

1/min: 800 1st speed

Supply-pump

bar: 3,0...3,6 pressure

1/min: 1250 2nd speed

Supply-pump

bar: 4,2...4,8 pressure

3rd speed 1/min: 2000 Supply-pump

bar: 6,3...6,9 pressure

Overflow quantity at overflow valve:

1/min: 500 1st speed

Oveflow : 41...83 cm3/10s: (26...98)

quantity 2nd speed 1/min: 2250

: 55...138 Over flow

quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2650

1st specifically cms/: 0 1000H.: cm3/: 0,0...7,0

2nd speed 1/min: 2540

cm3/: 10,0...16,0 Del.quantity

1000H.: (9,0...17,0)

1/min: 2440 3rd speed

cm3/: 20,0...26,0 Del.quantity

1000H.: (19,0...27,0)

1/min: 2250 4th speed

Del.quantity cm3/: 29,2...31,2

1000H.: (28,2...32,2)

5th speed 1/min: 2000

Del.quantity cm3/: 30,1...32,1 1000H.: (29,1...33,1) 6th speed 1/min: 1250 Del.quantity cm3/: 28,0...29,0

1000H.: (26,5...30,5)

7th speed 1/min: 800

Del.quantity cm3/: 28,2...30,8

1000H.: (27,5...31,5)

1/min: 500 8th speed

cm3/: 28,5...31,5 Del.quantity

1000H: (28,0...32,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300

ELAB volt: -

Del.quantity cm3/: -

1900H.: max.

Idle delivery:

1st speed 1/min: 375
Del.quantity cm3/: 7,0...9,0

1000H.: (4,0...12,0)

High Idle:

Speed 1/min: 470

Del.quantity cm3/: 7,0...9,0

1000H.: (4,0...12,0)

Residual:

1/min: 550 Speed

Del.quantity : 2,5...3,5

1000H.: (1,0...5,0)

Arrangement of drivers on engine-

speed lever for exhaust-gas-

recirculation valve linkage (guage)

1/min: 1125 1st speed

Del.quantity cm3/: 17.0..19.0 1000H.: (15,5..20,5)

Automatic starting fuel delivery:

1/min: 200 1st speed

Del.quantity cm3/: -

1000H: 20,0 ind.

1/min: 300 2nd speed

Del.quantity cm3/: -

1000H : 45,0 max.

Shutoff electromagnet:

Cut-in

min. voltage : 10.0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

: 3,2...3,4 mm

KF : 5,7...6,0 (Min

MS min

: 1,3..1,55 : 17,0...19,0 ХK min

XL 14,2...17,6

Remarks:

For adjustment of switching point (EGR valve), include 10.8 mm spacer at third fuel-delivery stop.

Note inst. in remarks column

Test sheet : FIA 1.9 H : 20.07.89 Edition replaces : 16.11.87 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 L184-1 Type number : 0 460 494 236

Customer-specific information

Customer

Engine : M707 CT 19.0

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening.

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Charge press. hPa: 800 Setting value mm: 5,4...5,8

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 800

Setting value bar: 6.1...6.7

Full-load del. with charge press.:

1/min: 1500 Charge press. hPa: 800 Del.quantity cm3/ 1000H.: 46,3...47,3

cm3/: 2,5 Dispersion 1000H: -

Full-load del. w/out charge press.:

Speed 1/min : 800

Del.quantity cm3/

1000H.: 35,6...36,6

Low-idle speed regulation:

1/min: 350 Charge press. hPa: -

Del.quantity cm3/ 1000H.: 8,0...12,0

cm3/: 2,5 Dispersion 1000H.: -

Full-load speed regulation:

1/min: 2400 Speed Charge press. hPa: 800 Del.quantity cm3/ 1000H: 15,0...21,0

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity mind cm3/1000H.: 57,0

Load-dependent start of delivery:

1/min: 1500 Charge press. hPa: -

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1/min: 800 1st speed Charge press. hPa: 800

TD travel mm: 1,7...2,5 mm: (1,4...2,8)
2nd speed 1/min: 1500
Charge press. hPa: 800

TD travel mm: 5,4...5,8mm: (4,9...6,3) 3rd speed 1/min: 2000

Charge press. hPa: 800

TD travel mm: 7,6...8,4 mm: (7,3...8,7) Del.quantity cm3/: 46,3...47,3 1000H.: (44,8...48,8) 1/min: 800 7th speed Supply-pump pressure characteristic: Charge press. hPa: -Del.quantity cm3/: 35,6...36,6 1000H.: (33,6...38,6) 1/min: 400 1st speed Charge press. hPa: 800 1/min: 600 8th speed Supply-pump Charge press. hPa: bar: 2,8...3,4 Del.quantity cm3/: 37,3...39,3 pressure 1000H: -2nd speed 1/min: 800 Charge press. hPa: 800 Supply-pump Zero delivery (stop): bar: 4,1...4,7 1/min: 1500 pressure 3rd speed Charge press. hPa: 800 Electr. shutoff: Supply-pump bar: 6,1...6,7 pressure Speed 1/min: 350 4th speed 1/min: 2000 ELAB volt: -Charge press. hPa: 800 Del.quantity cm3/: 0,0...3,0 1000H.: -Supply-pump max. pressure bar: 7,5...8,1 Idle delivery: Overflow quantity at overflow valve: 1/min: 350 1st speed Del.quantity cm3/: 8.0...12.0 1000H.: (6.0...14.0) 1/min: 600 1st speed Charge press. hPa: -Oveflow : 41...83 1/min: 400 2nd speed quantity cm3/10s: (26...98) Del.quantity cm3/: 2,0...8,0 2nd speed 1/min: 2100 1000H .: (1,0...9,0) Charge press. hPa: 800 1/min: 500 3rd speed Over Flow : 55...138 Del.quantity cm3/: 0,0...1,6 quantity cm3/10s: (40...153) 1000H .: -Delivery-quant. and breakaway char.: Automatic starting fuel delivery: 1/min: 800\* 1/min: 300 1st speed 1st speed Charge-air pressure-setting Del.quantity cm3/: point hPa: 450 ind. 1000H: 55,0 LDA stroke mm: 4,5 Del.quantity cm3/: 45,0...46,0 1000H.: (43,0...48,0) 1/min: 500 2nd speed Del.quantity cm3/: - max. 1000H: 45,0 1/min: 2550 2nd speed Charge press. hPa: 800 Del.quantity cm3/: 0,0...5,0 1000H.: -Shutoff electromagnet: 1/min: 2400 Cut-in 3rd speed Charge press. hPa: 800 min. voltage : 10,0 Del.quantity cm3/: 15,0...21,0 : 12,0 Rated voltage 1000H.: (14,0...22,0) 1/min: 2300 4th speed Mounting and assembly dimensions: Charge press. hPa: 800 Del.quantity cm3/: 29,0...36,0 1000H.: -Designation K : 3,2...3,4 mm mm : 5,6...6,0 mm : 1,3...1,7 1/min: 2100 KF 5th speed Charge press. hPa: 800 MS Del.quantity cm3/: 46,5...49,5 1000H.: (45,8...50,2) SVS max. mm: 5,4 ХK mm : 20,0...22,0 1/min: 1500 mm: 12,3...15,7 6th speed Charge press. hPa: 800 Remarks:

\* Correction at adjusting nut (46)

Microswitch setting instructions Microswitch is switched on between 0° idle and 12°...13° control lever angle (8.5...9.0 mm control lever travel).

Note inst. in remarks column

Test sheet : OPE 1,5 B : 18.07.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/10F2300 R365

: 0 460 620 004 Type number

Customer-specific information Customer : ISUZU

: 4 EE1-TC Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test in i. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Charge press. hPa: 1000 Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1250 Charge press. hPa: 1000 Setting value bar: 3,9...4,5 Full-load del. with charge press.:

Speed 1/min: 1250 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 52,5...53,5

Full-load del. w/out charge press.:

1/min : 550 Speed

Del.quantity cm3/

1000H.: 34,7...38,7

Low-idle speed regulation:

1/min: 415 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 9,5...13,5

Full-load speed regulation:

1/min: 2600 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 18,4...24,4

Start:

1/min: 100 Speed Charge press. hPa: -Del. quantity mind cm3/1000H.: 44,0

Load-dependent start of delivery:

1/min: 1250 Charge press. hPa: 1000

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 1000

mm: 0,3...1,1 TD travel mm: (0,0...1,4)

2nd speed 1/min: 1250

Charge press. hPa: 1000 mm: 2,9...3,3 TD travel

mm: (2,4...3,8)

3rd speed 1/min: 2000 Charge press. hPa: 1000 TD travel mm: 5.8...6.6 mm: (5.5...6.9)
4th speed 1/min: 2250

Charge press. hPa: 1000

mm: 6,8...7,6 mm: (6,5...7,9) TD travel Supply-pump pressure characteristic: 1/min: 600 1st speed Charge press. hPa: 1000 Supply-pump bar: 2,1...2,7 1/min: 1250 pressure 2nd speed Charge press. hPa: 1000 Supply-pump bar: 3,9...4,5 1/min: 2250 pressure 3rd speed Charge press. hPa: 1000 Speed Supply-pump ELAB bar: 6,5...7,1 pressure Overflow quantity at overflow valve: Charge press. hPa: 1000 Oveflow : 83...127 quantity cm3/10s: (68...142) Delivery-quant. and breakaway char.: 1st speed 1/min: 1000 Charge-air pressure-setting hPa: 410 taioa Del.quantity cm3/: 47.8...48.5 1000H.: (45.8...50.8) 1/min: 2750 2nd speed Charge press. hPa: 1000 Del.quantity cm3/: 0,0...5,0 1000H.: -1/min: 2600 3rd speed Charge press. hPa: 1000 Cut-in Del.quantity cm3/: 18,4...24,4 1000H.: (16,9...25,9) 4th speed 1/min: 2400 Charge press. hPa: 1000 Del.quantity cm3/: 41.0...49.0 1000H.: (40.0...50.0) 5th speed 1/min: 2300 MS Charge press. hPa: 1000
Del.quantity cm3/: 49,5...52,5
1000H.: (48,7...53,3)
6th speed 1/min: 2200 Charge press. hPa: 1000 Del.quantity cm3/: 50,0...53,0 1000H.: (49,2...53,8) 7th speed 1/min: 1250 Charge press. hPa: Del.quantity cm3/: 31,7...35,7 1000H.: (31,2...36,2) 8th speed 1/min: 1250 Charge press. hPa: 1000 Del.quantity cm3/: 52,5...53,5 1000H: (50,7...55,3)

9th speed 1/min: 1000 Charge press. hPa: 410 Del. quantity cm3/: 47.8...48.8 1000H: (45.8...50.8) 1/min: 550 10th speed Charge press. hPa: -Del. quantity cm3/: 34,7...38,7 1000H: (33,7...39,7) Zero delivery (stop): Electr. shutoff: 1/min: 415 volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 415 Del.quantity cm3/: 9.5...13.5 1000H.: (7.5...15.5) 1/min: 550 2nd speed Del.quantity cm3/: 0,0...5,0 1000H.: -Automatic starting fuel delivery: 2nd speed 1/min: 400 Del.quantity cm3/: - max. 1000H: 52,5 Shutoff electromagnet: : 10,0 min. voltage : 12,0 Rated voltage Mounting and assembly dimensions: mm : 0,8...1,0 Remarks:

Note remarks

Test sheet : MB 2,0 r6 Edition : 03.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 897

Injection pump

Pump designation : PES4M55C32ORS172 EP type number : 0 410 054 958

Governor

Governor design. : RSF360/2300M60-25

Governer no. : 0 420 021 132

Customer-spec. information Customer : DB-PKW

Engine : 0M601-Abol. MJ90

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

F09

Phasing : 0-90-180-270

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 3.0...3.1

100 s: (2.9...3.2)

cm3 : 0.2 Spread

100 s: (0.3)

2nd speed rpm : 335.0 Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 30.5...31.5 1000 : (29.5...32.5) Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8,0...8,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm: 1000 Rack travel in mm: 1,4...1.5

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

cm3 : 2.50rpm : 335 Spread Rack travel in mm: 6.6 1000 s: (3.00) Testing: Speed rpm : 250 STARTING FUEL DELIVERY Minimum rack trave: 9.00 Speed rpm: 335 Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 Rack travel in mm : 6.50...6.70 Rack travel in mm: 2.50 rpm : 630...730 1000 s: (52.0...0.0) Rack travel in mm: 20.10...0.00 Speed rpm : 1000 Speed Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 400 1st version Rack travel in mm: 5,2...5,4 Aneroid pressure h: 1100 : (5,1...5,5) rpm : 2500 Speed Rack travel in mm : 8.00...8.40 Del.quantity cm3/: 16.0...20.0 1909 s: (15.0...21.0) Spread cm3 : 2.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 1000 s: (3.00) Rack travel in m: 12.10...12.20 2nd speed rpm : 1800 Rack travel in m: 11.50...11.70 LOW IDLE 3rd speed rpm : 2200 Rack travel in m: 10.90...11.10 rpm : 335 Speed Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Aneroid/Altitude Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE rpm : 1000 REGULATION (ELR) Speed Pressure hPa : 950 Rack travel mm : 0.00...0.20 Control lever at idle stop Speed rpm : 360 Rack travel in mm: (13,0...14,4) Measurement 1/min: 1000 Del.quantity cm3/: -1000 s: (29,0...37,0) Speed : 1,8 1st pressure hPa : 900 Current A Control lever at full-load stop Rack travel in m: 0.50...0.70 rpm : 2950 2nd pressure hPa : 750 Speed Rack travel in m: 1.80...2.20 Rack travel in mm: 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test rpm : 100 Speed Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 rpm : 1800 Speed Del.quantity cm3/: 33.5...35.0 Remarks: 1000 s: (32.5...36.0) cm3 : 2.50 Pin projection = 16.60...16.70 mm Spread 1000 s: (3.0) Aneroid pressure h: 1100 rpm : 2200 CHECKING THE IDLE-SPEED AUXILIARY Speed Del.quantity cm3/: 31.0...33.0 SPRING CUTOFF -Control-lever position 490, max. 1000 s: (30.0...34.0) 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 335 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 10 angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 17.3°...17.7° (17.2...17.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

Test sheet : MB 2,0 r7 : 03.07.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 898

Injection pump

Pump designation : PES4M55C32ORS172 EP type number : 0 410 054 958

Governor

Governor design. : RSF375/2300M56-10

Governer no. : 0 420 021 130

Customer-spec. information Customer : DB-PKW

Engine : 0M601-Abol. MJ90

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. <sup>D</sup>C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing

: 0-90-180-270

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.0...3.1

100 s: (2,9...3.2)

cm3 : 0.2 Spread

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1 Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

: 2.50 cm3 Spread 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,0...8,4

rpm : 2500 Speed 4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Speed Rack travel in mm: 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

F12

Speed rpm : 375 Rack travel in mm: 6.5 Testing: Speed rpm : 250 Minimum rack trave: 11.00 Speed rpm: 375 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.50 rpm : 650...750 Speed Speed rpm: 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm: 5,5...5,7 : (5,4...5,8) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.10...12.20 2nd speed rpm : 1800 Rack travel in m: 11.50...11.70 3rd speed rpm : 2200 Rack travel in m: 10.90...11.10 Aneroid/Altitude Compensator Test 1st version Setting rpm : 1000 Speed Pressure hPa : 950 Rack travel mm : 0.00...0.20 Measurement Speed 1/min: 1000 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 rpm : 1800 Del.quantity cm3/: 33.5...35.0 1000 s: (32.5...36.0) cm3 : 2.50 Spread 1000 s: (3.) Aneroid pressure h: 1100 Speed rpm : 2200 Del.quantity cm3/ : 31.0...33.0 1000 s: (30.0...34.0)

Spread cm3 : 2.50 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 8.00...8.40

Del.quantity cm3/: 16.0...20.0 1000 s: (15.0...21.0)

cm3 : 2.50 Spread 1000 s: (3.00)

LOW IDLE

Speed rpm : 375 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Spread cm3 : 1.00

1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (7,8...9,4) Del.quantity cm3/: -1000 s: (10,5...18,5) Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5 control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 17.3°...17.7° (17.2...17.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

Test sheet : 2.3 d : 17.07.89 Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 400 074 908

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF375/2000M69 Governer no. : 0 420 021 100

Customer-spec. information

Customer

: 0M601-2.3L Engine

1st version kW : 60.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)
Rack travel in mm : 20.00...22.00

Firing order : 1-3-4-2

F15

: 0-90-180-270 Phasing

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

Del.quantity : 40.0...41.0 1000 : (39.0...42.0) Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0
3rd rack travel in: 7.0...7.5
Speed rpm : 2200

4th rack travel in: 2500

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Speed

Rack travel in mm: 1,4...5

LOW IDLE 1 Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 2000 Del.quantity cm3/ : 39.5...41.5 1000 s: (38.5...42.5) Speed rpm : 375 Rack travel in mm: 5.1 Testing: cm3 : 2.50 Spread Speed rpm : 250 1000 s: (3.00) Minimum rack trave: 10.20 Aneroid pressure h: 1100 rpm : 375 Speed Rack travel in mm : 5.00...5.20 Rack travel in mm: 3.00 1000 s: (33.5...37.0) rpm : 450...550 cm3 : 2.50 Spread rpm : 1000 Speed 1000 s: (3.00) Maximum rack trave: 1.50 Aneroid pressure h: 1100 Speed rpm : 800 Del.quantity cm3/: 37.5...39.0 SET IDLE AUXILIARY SPRING rpm : 420 1000 s: (36.5...40.0) Speed cm3 : 2.50 Rack travel in mm: 3,9...4,1 Spread : (3,8...4,2) 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1000 Rack travel in m: 12.80...12.90 2nd speed rpm : 1400 Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 Rack travel in m: 12.20...12.50 3rd speed rpm : 2000 1000 s: (52.0...0.0) Rack travel in m: 11.40...11.70 Rack travel in mm : 20.10...0.00 4th speed rpm : 500 Rack travel in m: 12.10...12.40 HIGH IDLE 5th speed rpm : 800 Rack travel in m: 12.40...12.70 1st version Aneroid pressure h: 1100 Speed rpm : 2200 Rack travel in mm : 7.00...7.50 Aneroid/Altitude Compensator Test Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) cm3 : 2.50 1st version Spread Setting 1000 s: (3.00) Speed rpm : 1000 Pressure hPa : 950 LOW IDLE Rack travel mm : 0.00...0.20 rpm : 375 Speed Rack travel in mm: 5.00...5.20
Del.quantity cm3/: 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00 Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 1000 s: (1.50) 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 SETTING PNUEUMATIC FAST IDLE (ELA) FUEL DELIVERY CHARACTERISTICS rpm : 425 Speed Rack travel in mm: 6,4...8,0 1st version Aneroid pressure h: 1100 rpm : 1400 Speed Del.quantity cm3/: 39.5...41.0 1000 s: (38.5...42.0) Spread cm3 : 2.50 hPa : 400 Vacuum Remarks: 1000 s: (3.00)

Aneroid pressure h: 1100

Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

Test sheet : MB 2.5 C6 Edition : 03.07.89

Replaces Test oil : ISO-4113

Combination no. : 0 400 075 935

Injection pump

Pump designation : PES5M55C32ORS158-1

EP type number : 0 410 055 979

Governor

Governor design. : RSF340/2300M65-4 Governer no. : 0 420 021 144

Customer-spec. information Customer : DB-PKW

Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30 : (2.15...2.35) Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

F18

: 0-72-144-216-288 Phasing

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity
1000 : 51.0...52.0 : (50.0...53.0)

cm3 : 2.50

Spread 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8.1...8.5

rpm : 2500 Speed 4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

**POSITION** 

rpm : 1000 Speed Rack travel in mm: 1.7...1.8

LOW IDLE 1 Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 315 Rack travel in mm: 5.5 Testing: Speed rpm : 220 Speed Minimum rack trave: 8.00 Speed rpm : 315 Spread Rack travel in mm: 5.40...5.60 Rack travel in mm: 2.50 rpm : 540...640 rpm : 1000 Speed Speed rpm Maximum rack trave: 1.80 Control lever SET IDLE AUXILIARY SPRING Speed rpm: 380 Rack travel in mm: 4.2...4.4 Speed rpm : (4.1...4.5) STARTING FUEL DELIVERY TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Speed Rack travel in m: 13.90...14.00 2nd speed rpm : 1600 Rack travel in m: 13.20...13.40 3rd speed rpm : 2200 Rack travel in m: 12.30...12.50 HIGH IDLE Aneroid/Altitude 1st version Compensator Test Speed 1st version Setting Speed rpm : 1000 Spread Pressure hPa : 1600 Rack travel mm : 0.50...0.90 LOW IDLE Measurement 1/min: 1000 Speed Speed 1st pressure hPa : 1050 Rack travel in m: 3.90...4.10 2nd pressure hPa : 750 Spread Rack travel in m: 5.80...6.20 FUEL DELIVERY CHARACTERISTICS Remarks: 1st version Aneroid pressure h: 1850 rpm : 1600 Del.quantity cm3/: 50.0...51.5 1000 s: (49.0...52.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1850 Speed rpm : 2200 Del.quantity cm3/: 48.5...50.5 1000 s: (47.5...51.5)

cm3 : 2.50Spread 1000 s: (3.00) Aneroid pressure h: 1050 rpm : 1000 Del.quantity cm3/: 33.0...34.0 1000 s: (32.0...35.0) cm3 : 2.50 1000 s: (3.00)

#### INTERMEDIATE RATED SPEED

position degrees: 30...0 Rack travel in mm: 9.50 : 0...1000

rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm: 20.10...0.00

Anerold pressure h: 1850 rpm : 2500 Rack travel in mm : 8.10...8.50 Del.quantity cm3/: 29.0...33.0 1000 s: (28.0...34.0) cm3 : 2.50 1000 s: (3.00)

rpm : 315 Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 5.5...6.5 1000 s: (4.5...9.0) cm3 : 1.001000 s: (1.50)

Note remarks

: KHD 1 g 28 : 27.06.88 Test sheet Edition Replaces : 26.06.87 Test oil : ISO-4113

Combination no. : 0 400 464 133

Injection pump

Pump designation : PES4A80D410/3RS1349

EP type number : 0 410 484 021

Governor

Governor design. : RSV325...1175A8C2163

-4L

: 0 420 232 476 Governer no.

Customer-spec. information Customer : KHD

Engine : F4L912

1st version kW : 51.0 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

: 0-90-180-270 Phasing Tolerance + - 0 : 0.50(0.75)

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 10.10...10.20

Del.guantity cm3/ : 5.7...5.8

100 s: (5.6...6.0)

Spread cm3 : 0.25

100 s: (0.40)

2nd speed rpm: 325
Rack travel in mm: 5.90...6.10
Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.7)

Spread cm3 : 0.20

100 s: (0.30)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

: 57.5...58.5 Del.quantity 1000 : (56.0...60.0)

cm3 : 2.5 Spread

1000 : (4.0)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 9.10

Speed rpm : 1215...1225

2nd rack travel in: 4.00 Speed rpm : 1240...1270

3rd rack travel in: 4.00

Speed rpm : 1255...1285

4th rack travel in: 1415

F20

Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 13...17 Setting point w/out bumper spring rpm : 325 Speed Rack travel in mm: 5.50 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 Speed LOW : 460...520 TORQUE CONTROL Dimension a mm : 0.85 Torque control curve - 1st version 1st speed rpm : 1175 Rack travel in m: 10.10...10.20 ad speed rpm : 500 2nd speed Rack travel in m: 11.00...11.10 3rd speed rpm : 990 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 800 Del.quantity cm3/ : 55.0...57.0 1000 s: (53.0...59.0)

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1215...1225

### STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...145.0 1000 s: (132.0...148.0) Rack travel in mm: 19.50...21.00

Remarks:

: TKS2.70

# **APPLICATION**

Tractor (tractor engines)

Note remarks

Test sheet Edition : LAB 4,6 a : 23.08.89

Replaces Test oil

: ISO-4113

Combination no. : 0 400 474 134

Injection pump

Pump designation : PES4A85D41ORS1232

Governor

Governor design. : RSV250...1000A1B1024

Customer-spec. information

: LAMBORGHINI Customer

Engine : FL 1104/2

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.0

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 3,70...3,75 : (3,65...3,80) Prestroke mm

Rack travel in mm : 21,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0: 0,50 (0,75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10,20 8 maximum rack tra: 21,00 Difference CS: 4,5...6,0

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm: 6,00

Del.quantity cm3/: 2,4...3,6

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 9,00 Del.quantity cm3/ : 5,9...6,4

100 s: (-)

rpm : 200 3rd speed Rack travel in mm : 9,00 Del.quantity cm3/: 3,6...4,4 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack 'ravel in mm : 0,30...0,70

Governor spring pre-tension Click setting x : ?

1st version

rpm : 1000 Speed

Del.quantity : 78,5...80,5

FULL LOAD DELIV. AT FULL LOAD STOP

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9,50

Speed rpm : 1055...1085

2nd rack travel in: 4,00

Speed rpm : 1105...1135

4th rack travel in: 1220

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 21...29

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6,00

F22

Testing:

rpm : 100 Speed Minimum rack trave: 19,00

Speed rpm: 250 Rack travel in mm: 5,70...6,30

Speed rpm: 440 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9,00
2nd speed rpm : 450
Rack travel in m: 9,00
3rd speed rpm : 300
Rack travel in m: 10,20...10,80

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 1020 Speed

Remarks:

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : MB 8,7 m : 09.08.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 646 094

Injection pump

Pump designation : PE6A90C410RS2124

Governor

Governor design. : R0300/1125AB713

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 360

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.0

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 914

Outside diameter

x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25 : (2.10...2.30) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 9,00

Del.quantity cm3/ : 6,4...6,9

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm: 15,00

Del.quantity cm3/: 13,8...15,3 100 s: (-) 3rd speed rpm: 200 Rack travel in mm: 9,00 Del.quantity cm3/: 3,7...4,9

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.10...15.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 83,5...85,5

RATED SPEED

1st version

Setting point:

Speed rpm : 1050 Rack travel in mm: 15.4

Testing:

1st rack travel in: 15,20

Speed rpm : 1115...1145

2nd rack travel in: 10,50

Speed rpm : 1165...1195 3rd rack travel in: 0.00...8.00

Speed rpm : 1230 4th rack travel in: 1310

Speed rpm : <0.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 570 Rack travel in mm : <0.00

Testing:

Speed ` rpm : 200 Minimum rack trave: 7.80

rpm : 300 Speed

Rack travel in mm : 4.70...7.10

Rack travel in mm: 2.25
Speed rpm: 390...410
Speed rpm: 470
Maximum rack trave: 0.01

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 600

Rack travel in m: 15,80...16,00 2nd speed rpm : 700 Rack travel in m: 15,40...15,60

# FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 86.0...89.0 1000 s: (-)

Speed rpm: 500 Del.quantity cm3/: 76,5...79,5 1000 s: (-)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 450

# LOW IDLE

Speed rpm : 100 Rack travel in mm: 15,25

Remarks:

Note remarks

Test sheet : DAF 8.3 n 5 : 27.06.88 Edition Replaces : 12.09.86 Test oil : ISO-4113

Combination no. : 0 400 676 175

Injection pump

Pump designation : PE6A95D41ORS2575 EP type number : 0 410 696 984

Governor

: RSV250...1200A5C2198 Governor design.

-1L

Governer no. : 0 420 232 442

Customer-spec. information Customer : DAF

Engine : DH825

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)
Rack travel in mm : 7.50...10.50 firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50(0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference CS: 3.00...4.00

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 7.3...7.5

100 s: (7.1...7.7)

: 0.35 Spread cm3

100 s: (0.60)

rpm : 250 2nd speed

Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.35Spread

100 s: 0.55

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 73.0...75.0 1000 : (71.0...77.0) cm3 : 3.5

Spread

1000 : (6.0)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.40

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1300...1330

3rd rack travel in: 4.00

Speed rpm : 1340...1370

4th rack travel in: 1505 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 5.70 Speed rpm : 250

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00

Speed rpm : 655...715

TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.40...10.50 2nd speed rpm : 500 Rack travel in m: 11.20...11.30

3rd speed rpm : 800

Rack travel in m: 11.10...11.20

4th speed rpm : 940

Rack travel in m: 10.70...11.00

# FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/ : 74.5...77.5

1000 s: (72.0...80.0)

### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...140.0

1000 s: (122.0...143.0)

Rack travel in mm : 19.50...21.00

Remarks:

Note remarks

Test sheet : MB 5.7 N 11 Edition : 21.1.88 Edition Replaces Test oil

: 12.9.86 : ISO-4113

Combination no. : 0 400 846 336

Injection pump

Pump designation : PES6A90D410RS2293W

EP type number : 0 410 896 049

Governor

Governor design. : RQV300...1425AB740L

Governer no. : 0 420 212 037

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 352A

1st version kW : 115.0 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

F28

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50(0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

cm3 : 0.30Spread

100 s: (0.45)

2nd speed rpm : 300
Rack travel in mm : 7.50...7.70
Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.70...2.20

2nd speed rpm : 550

travel mm : 2.70...3.00

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 950

: 5.20...5.50 travel mm

5th speed rpm : 1460

travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 71.5...72.5 1000 : (69.5...74.5)

cm3 : 3.0 Spread 1000 : (4.5)

RATED SPEED

1st version Control lever

position degrees: 55...63

Testing:

1st rack travel in: 9.90

Speed rpm : 1455...1465

2nd rack travel in: 4.00

Speed rpm : 1560...1590 4th rack travel in: 1700 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 9.10

Speed rpm: 300 Rack travel in mm: 7.50...7.70

CONSTANT REGULATION

rpm : 370...520 Speed

START CUT-OUT

Speed 1/min: 220(240)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1455...1465 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 71.0...81.0 1000 s: (68.0...84.0)

Remarks:

Note remarks

Test sheet : MB 6,0 a : 11.07.88 Edition Replaces : 16.10.87 Test oil : ISO-4113

Combination no. : 0 400 846 522

Injection pump

Pump designation : PES6A90D41ORS2667 EP type number : 0 410 896 080

Governor

: RQV300...1400AB1065-Governor design.

: 0 420 212 168 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 366 Engine

: 100.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

GO2

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 6.3...6.4

100 s: (6.1...6.6)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 300.0 Rack travel in mm : 8.9...9.1 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.2Spread 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 0.80...1.30

rpm : 500 2nd speed

travel mm : 2.30...2.80

rpm : 750 3rd speed

: 4.10...4.30 travel mm

rpm : 1500 4th speed

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 63.5...64.5 Del.quantity 1000 : (61.5...66.5)

cm3 : 3.00 Spread

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.10

rpm : 1460...1470 Speed

2nd rack travel in: 4.00

Speed rpm : 1560...1590

4th rack travel in: 1700 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 21...29

Testina:

Speed rpm : 100 Minimum rack trave: 10.30 Spee® rpm : 300

Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

rpm : 540...680 Speed

TORQUE CONTROL

Dimension a mm : 1.10

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 11.10...11.20

2nd speed rpm : 500

Rack travel in m: 12.20...12.30

3rd speed rpm : 900

Rack travel in m: 11.70...11.90

4th speed rpm : 1100

Rack travel in m: 11.40...11.70

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 52.0...54.0 1000 s: (49.5...56.5) Speed rpm : 900

Del.quantity cm3/: 55.0...58.0 1000 s: (52.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100

G03

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0) Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

Test sheet : IHC 9,0 f Edition : 28.8.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 848 020

Injection pump

Pump designation : PES8A75D32ORS2463

EP type number : 0 410 879 989

Governor

Governor design. : RQV300...1500AB912DR

Governer no. : 0 420 215 063

Customer-spec. information Customer : IHC

: DV 550 C Engine

1st version kW : 132.5 Rated speed : 3000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 2.4

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 1.95...2.05 \*

: (1.90...2.10)

Rack travel in mm: 10.70

Prestroke mm : \*\*
Firing order : 1-8-7-3-6-5-4-2

: 0-45-90-135-180-225-Phasing 280-315

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 9.65...9.75

Del.quantity cm3/: 5.8...5.9

100 s: (-)

Spread cm3 : 0.7

100 s: (-)

2nd speed rpm : 300
Rack travel in mm : 9.60...9.70
Del.quantity cm3/: 0.1...1.5 \*

100 s: (-)

3rd speed rpm: 300 Rack travel in mm: 9.20...9.40

Del.quantity cm3/: 3.7...4.6 \*\*

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1600

Rack travel in mm : 15.00...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

Del.quantity : 58.8...59.8

1000 : (-) cm3 : 7.0 1000 : (-)

Spread

RATED SPEED

1st version

Control lever

position degrees: 64...72

Testing:

1st rack travel in: 8.70

Speed rpm : 1600...1610

2nd rack travel in: 6.25

Speed rpm : 1785...1815

4th rack travel in: 2000

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed rpm : 200

Minimum rack trave: 7.40 : 300 Speed rpm

Rack travel in mm : 5.40...7.30

Rack travel in mm: 3.05 Speed rpm : 440...460

rpm : 600 Speed Maximum rack trave: 2.60

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 9.60...9.80

: 1000 2nd speed грт

Rack travel in m: 10.00...10.10

3rd speed rpm : 700

Rack travel in m: 10.00...10.10

START CUT-OUT

Speed 1/min: 150...230

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm3/ : 50.5...52.5

1000 s: (-)

cm3 : 7.0 Spread

1990 s: (-)

: 300 Speed rpm

Del.quantity cm3/: 1.0...15.0 \* 1000 s: (-)

rpm : 300 Speed

Del.quantity cm3/: 37.0...46.0 \*\* 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1600...1610

INTERMEDIATE RATED SPEED

Control lever

position degrees: 61...69

Rack travel in mm: 16.30

rpm : 1490...1510 Speed

Rack travel in mm: 7.55

Speed : 1740...1760 rpm

STARTING FUEL DELIVERY

**G05** 

1000 s: (-)

Rack travel in mm: 21.00

HIGH IDLE

1st version

Speed rpm: 1650

Rack travel in mm : 7.00...8.00

LOW IDLE

Speed rpm : 300

Del.quantity cm3/: 15.4...19.4 \*\*
1000 s: (-)

Remarks:

 $\star$  = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

Port opening at 3.95...4.00 mm plunger

lift

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

Test sheet : IHC 9.0 f 5 : 28.8.89 Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 400 848 020

Injection pump

Pump designation : PES8A75D32ORS2463 EP type number : 0 410 879 989

Governor

Governor design. : RQV300...1500AB912DR

Customer-spec. information Customer : IHC

Engine : DV 550 C

1st version kW : 147.2 : 3000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 2.4

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 1.95...2.05 \*

: (1.90...2.10)

Rack travel in mm: 10.70 Prestroke mm : \*\*

Rack travel in mm: 10.70

Firing order : 1-8-7-3-6-5-4-2

: 0-45-90-135-180-225-Phasing

280-315

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm: 10.65...10.75

Del.quantity cm3/: 6.8...6.9

100 s: (-)

cm3 : 0.6 Spread

100 s: (-)

2nd speed rpm : 300 Rack travel in mm : 9.00...9.50

Del.quantity cm3/: 0.1...1.5 \*

100 s: (-)

rpm : 300 3rd speed

Rack travel in mm : 9.00...9.50 Del.quantity cm3/ : 3.7...4.6 \*\*

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1600

Rack travel in mm : 15.00...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

Del.quantity : 68.0...69.0

1000 : (-)

cm3 : 6.0 Spread

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 64...72

Testing:

1st rack travel in: 9.70

Speed rpm : 1600...1610

2nd rack travel in: 6.25

rpm : 1785...1815 Speed

4th rack travel in: 2000

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 6...14

**G06** 

Testing:

Speed rpm : 200 Minimum rack trave: 7.40 Speed rpm : 300

Rack travel in mm : 5.40...7.30

Rack travel in mm: 3.05 rpm : 440...460 Speed rpm : 600 Maximum rack trave: 2.60

START CUT-OUT

Speed 1/min: 150...230

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1600...1610

INTERMEDIATE RATED SPEED

Control lever

position degrees: 61...69 Rack travel in mm: 16.30 Speed rpm : 1490...1510

Rack travel in mm: 7.55

Speed rpm : 1740...1760

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...134.0\*\*

1000 s: (-)

Rack travel in mm: 21.00

HIGH IDLE

1st version

Speed rpm : 1650 Rack travel in mm : 7.00...8.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 8.0...10.0 \*\*
1000 s: (-)

Remarks:

\* = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

**G07** 

Port opening at 3.95...4.00 mm plunger

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS 280-315 Tolerance + - 0 : 0.50 (0.75) Note remarks BASIC SETTING Test sheet : IHC 9.0 f 1 : 28.8.89 Edition 1st speed rpm: 1500 Replaces Test oil : ISO-4113 Rack travel in mm : 9.30...9.40 Combination no. : 0 400 848 022 Del.quantity cm3/: 4.9...5.0 Injection pump 100 s: (-) Pump designation : PES8A75D32ORS2463 Governor Spread cm3 : 0.7 : RQV300...1500AB913DR Governor design. 100 s: (-) Customer-spec. information rpm : 300 Customer : IHC 2nd speed Rack travel in mm : 9.20...9.40 Engine : DV 550 C Del.quantity cm3/: 1.1...1.5 \* 100 s: (-) rpm : 300 1st version kW : 117.8 3rd speed Rack travel in mm : 9.20...9.40 Rated speed : 3000 Del.quantity cm3/: 3.6...4.6 \*\* TEST BENCH REQUIREMENTS 100 s: (-) Test oil GUIDE SLEEVE POSITION inlet temp. OC : 38...42 Control-lever position Degree: -1 Inlet press., bar: 2.4 rpm : 1600 Speed Rack travel in mm : 15.00...18.50 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly Opening 1st version pressure, bar : 172...175 rpm : 1500 Speed : 49.5...50.5 Del.quantity 1000 : (-) cm3 : 7.0 1000 : (-) : 1 680 750 008 Test lines Spread Outside diameter x Wall thickness RATED SPEED : 6,00X2,00X600 x Length mm 1st version (A) Injection pump setting values Control lever Insp. values in parentheses position degrees: 64...72 Set equal delivery quant. per values Testing: 1st rack travel in: 8.35 rpm : 1605...1615 Speed

2nd rack travel in: 6.25

4th rack travel in: 2000

position degrees: 6...14

Speed

Speed

LOW IDLE 1 Control lever

Testing:

rpm : 1785...1815

rpm : 0.00...1.00

BEGINNING OF DELIVERY

: 1.95...2.05 \* Prestroke mm

: (1.90...2.10)

Rack travel in mm: 10,70

Prestroke mm : \*\*

: 1-8-7-3-6-5-4-2 Firing order

Phasing : 0-45-90-135-180-225-

608

Speed rpm Minimum rack trave: 7.40 : 300 Speed rpm

Rack travel in mm: 5.40...7.30 Rack travel in mm: 3.05 rpm : 440...460 Speed

Speed грт : 600 Maximum rack trave: 2.60

TORQUE CONTROL

Dimension a mm : 0.45

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 9.30...9.40

2nd speed rpm : 1000

Rack travel in m: 9.80...10.00

3rd speed rpm : 700

Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 150...230

FUEL DELIVERY CHARACTERISTICS

1st version

: 1000 Speed rpm

Del.quantity cm3/: 46.5...48.5 1000 s: (-)

Spread cm3 : 6.01000 s: (-) rpm : 300

Speed rpm

Del.quantity cm3/: 1.0...15.0 \* 1000 s: (-)

rpm\_ : 300 Speed

Del.quantity cm3/: 36.0...46.0 \*\*

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.35

rpm : 1605...1615 Speed

INTERMEDIATE RATED SPEED

Control lever

position degrees: 61...69 Rack travel in mm: 16.30 rpm : 1490...1510 Speed

Rack travel in mm: 7.55

: 1740...1760 Speed rpm

STARTING FUEL DELIVERY

Rack travel in mm: 21.00

HIGH IDLE

1st version

rpm : 1650 Speed

Rack travel in mm : 7.00...8.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 17.0...21.0 \*\*

1000 s: (-)

Remarks:

 $\star$  = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

Port opening at 3.95...4.00 mm plunger

lift

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

Test sheet : KHD 1 g 4 Edition : 27.06.88 : 30.03.87 Replaces Test oil : ISO-4113

Combination no. : 0 400 866 111

Injection pump

Pump designation : PES6A8SD410/3RS2611

EP type number : 0 410 886 902

Governor

: RSV325...1200A0C2148 Governor design.

: 0 420 232 293 Governer no.

Customer-spec. information Customer : KHD

Engine : F6L913

1st version kW : 84.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm: 9.0...12.0 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300

Tolerance + - 0 : 0.50(0.75)

BASIC SETTING

Phasing

1st speed rpm: 1200

Rack travel in mm : 11,3...11.4

Del.quantity cm3/ : 6.9...7.0

100 s: (6.7...7.2)

cm3 : 0.3Spread

100 s: (0.45)

rpm : 325 2nd speed

Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 69.5...70.5 Del quantity

1000 : (67.5...72.5)

cm3 : 3.0 Spread

1000 : (4.5)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 10.30

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1315...1345

4th rack travel in: 1425

Speed rpm : 0.30...1.40

G10

LOW IDLE 1 Control lever

position degrees: 28...36

Setting point w/out bumper spring

rpm : 325 Speed Rack travel in mm: 8.50 rpm : 325 Speed

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00 Speed rpm : 450...510

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 11.30...11.40

2nd speed rpm : 500

Rack travel in m: 11.80...11.90

3rd speed rpm : 975

Rack travel in m: 11.60...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 63.5...65.5 1000 s: (61.0...68.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 16.90...17.30

Remarks:

: DX

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : MWM 6.2 e 3 Edition : 01.07.88 Replaces : 12.09.86 Test oil : ISO-4113

Combination no. : 0 400 866 114

Injection pump

Pump designation : PES6A90D320/3RS2660

EP type number : 0 410 896 078

Governor

Governor design. : RSV325...1200A0C2182

-1R

: 0 420 233 192 Governer no.

Customer-spec. information Customer

: TD226B-6 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50(0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference CS: 3.50...4.50

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 9.7...9.8

100 s: (9.5...10.0)

Spread cm3 : 0.30

100 s: (0.45)

rpm : 325 2nd speed

Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.25 Spread 100 s: 0.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3,25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 700

: 97.5...98.5 Del.quantity 1000 : (95.5...100.5)

cm3 : 3.0 Spread

1000 : 4.5

RATED SPEED

1st version Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.00

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1275...1305

3rd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1465

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 325 Rack travel in mm : 6.50

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

rpm : 495...555 Speed

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 12.00...12.10

2nd speed rpm : 500

Rack travel in m: 12.30...12.40

3rd speed rpm : 1115

Rack travel in m: 12.10...12.30

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed hPa : 700 Pressure

Rack travel mm : 12.30...12.40

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 275

Rack travel in m: 11.70...11.80

3rd pressure hPa : 80

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 275

Speed rpm : 500

Del.quantity cm3/: 83.0...85.0 1000 s: (80.5...87.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 135.0...145.0

1000 s: (132.0...148.0)

Rack travel in mm : 19.50...21.00

Remarks:

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : CAS 4,9 b 4 Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 072

Injection pump

Pump designation : PES4A85C420LS2054

Governor

Governor design. : RSV300...950A2B262DR

Customer-spec. information Customer : CASE

: A 301 D Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.0

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 6,55...7,05

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 15,00 Del.quantity cm3/ : 14,05...14,85

100 s: (-) rpm : 200 3rd speed

Rack travel in mm: 6,00 Del.quantity cm3/: 1,3...2,3

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0,30...6,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 930 Speed

Del.quantity : 71.0...73.0

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 7.50 Speed rpm: 1085...1015 2nd rack travel in: 2.80

Speed rpm : 1065...1095

4th rack travel in: 1160

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 5,50

G14

full-load delivery with torque-control

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 300

Rack travel in mm : 5,20...5,80

Rack travel in mm: 2.85 Speed rpm : 390...410 Speed rpm : 530

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 930 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,40...9,60

3rd speed rpm : 600

Rack travel in m: 9,80...10,00

4th speed rpm : 400

Rack travel in m: 9,80...10,10

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 80.0...83.0 1000 s: (-)

rpm : 550 Speed

Del.quantity cm3/: 79.0...83.0 1000 s: (-)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.00

Speed rpm : 950...965

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 80,0...90,0

HIGH IDLE

1st version

rpm : 1040

Del.quantity cm3/: 13,5...23,5

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

G15

#### Note remarks

Test sheet : CAS 4,9 b 3 Edition : 04.08.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 874 083

Injection pump

Pump designation : PES4A85C420LS2054

Governor

Governor design. : RSV300...975A2B262

Customer-spec. information Customer : CASE

Engine : A 301 D

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.0

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

616

#### BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 6,55...7,05

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm: 15,00
Del.quantity cm3/: 14,05...14,85

rpm : 1000 3rd speed Rack travel in mm: 6,00 Del.quantity cm3/: 2.3...3.1

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 955 Speed

Del.quantity : (-) : 70,0...72,0

#### RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 7,60

Speed rpm : 1005...1035

2nd rack travel in: 3.70 Speed rpm: 1065...1095

4th rack travel in: 1200

rpm : 0,00...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 300

Rack travel in mm: 5,50

control-rod travel. Increase in

Testing: Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 300 Rack travel in mm: 5,20...5,80 Rack travel in mm: 2.85 Speed rpm : 390...410 Speed rpm : 530 Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 955 Rack travel in m: 9,00

2nd speed rpm : 800 Rack travel in m: 9,60...9,80 3rd speed rpm : 600 Rack travel in m: 9,90...10,20

4th speed rpm : 400

Rack travel in m: 9,90...10,20

FUEL DELIVERY CHARACTERISTICS

1st version Speed

rpm : 650 Del.quantity cm3/: 80,0...83,0

1000 s: (-)

Speed rpm : 550

Del.quantity cm3/: 77,5...81,5

1000 s: (-)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 975...990

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 80,0...90,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1040

Del.quantity cm3/: 13,5...23,5

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less

G17

Note remarks

Test sheet : CAS 1 a 1 Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 101

Injection pump

Pump designation : PES4A80C420LS2263

Governor

Governor design.: RSV375...1000A2B539D

Customer-spec. information Customer : CASE

Engine : A 267 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm : 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm: 12,00
Del.quantity cm3/: 6,85...7,65
100 s: (-)
3rd speed rpm: 200

Rack travel in mm : 6,00 Del.quantity cm3/ : 1,35...2,15

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Decree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Del.quantity : 60,0...62,0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11,00

Speed rpm : 995...1025

2nd rack travel in: 5,10

Speed rpm : 1085...1115

4th rack travel in: 1240

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 6,00

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 5,70...6,30

Rack travel in mm: 3.95 rpm : 440...460 rpm : 600 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 980 Rack travel in m: 9,00 2nd speed rpm : 800 Rack travel in m: 9,30...9,50

3rd speed rpm : 500 Rack travel in m: 9,40...9,70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 61,5...64,5 1000 s: (-)

Speed rpm : 600 Del.quantity cm3/ : <63,5 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 1010

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 111,0...117,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1110 Del.quantity cm3/ : 6,5...14,5 1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/: 12,5...16,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

#### Note remarks

: CAS 4,9 a 2 Test sheet Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 106

Injection pump

Pump designation : PES4A85C420LS2263

Governor

Governor design. : RSV375...975A2B543DR

Customer-spec. information Customer : CASE

: A 301 BD Engine

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

#### BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

## G20

#### BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05 100 s: (-)

rpm : 200 3rd speed Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Del.quantity : 62,0...64,0

1000 : (-)

#### RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10,50

rpm : 1000...1030 Speed

2nd rack travel in: 4,10

Speed rpm : 1085...1115

4th rack travel in: 1200

rpm : 0,00...1,00 Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 7,50 Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,20...7,80

Rack travel in mm: 5.25 Speed rpm : 440...460

rpm : 640 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 975 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70
3rd speed rpm : 450

Rack travel in m: 10,10...10,40

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 74,0...77,0

1000 s: (-)

rpm : 500 Speed Del.quantity cm3/: <76.0 1900 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 1015 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 126,0...132,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1075

Del.quantity cm3/: 10,5...19,5 1000 s: (-)

LOW IDLE

Speed rpm : 375

Del.quantity cm3/: 15,5...19,5

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

#### Note remarks

: CAS 4,9 a 3 Test sheet Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 137

Injection pump

Pump designation : PES4A85C420LS2263

Governor

Governor design. : RSV375...975A2B543DR

Customer-spec. information Customer : CASE

Engine : A 301 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing Phasing : 0-90-180-27 Tolerance + - 0 : 0,50 (0,75)

622

#### BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

rpm : 200 3rd speed

Rack travel in mm : 6,00 Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Decree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Del.quantity : 62,0...64,0

RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10,50

Speed rpm : 1000...1030

2nd rack travel in: 4,10

Speed rpm : 1085...1115

4th rack travel in: 1200

rpm : 0,00...1,00

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 7,50 Testing:

rpm : 150 Speed Minimum rack trave: 19.00 rpm : <u>3</u>75 Speed

Rack travel in mm : 7,20...7,80

Rack travel in mm: 5.25 Speed rpm : 440...460

Speed rpm: 640 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 975 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70

3rd speed rpm : 450

Rack travel in m: 10,10...10,40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/: 74,0...77,0
1000 s: (-)
Speed rpm : 500

Del.quantity cm3/: <76,0 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00 rpm : 1015 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 126,0...132,0 1000 s: (-)

HIGH IDLE

1st version

rpm : 1075 Speed

Del.quantity cm3/: 10,5...19,5 1000 s: (-)

LOW IDLE

1000 s: (-)

#### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : CAS 1 a Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 153

Injection pump

Pump designation : PES4A80C420LS2263

Governor

Governor design.: RSV375...1000A2B518D

Customer-spec. information Customer

Engine : A-267 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 : (2,10...2,30) Prestroke mm

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-240 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0,3

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00 Del.quantity cm3/ : 6,85...7,65

100 s: (-)

rpm : 200 3rd speed

Rack travel in mm : 6,00 Del.quantity cm3/ : 1,35...2,15

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 62,5...64,5

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10,90

Speed rpm : 1025...1055

2nd rack travel in: 4,60

Speed rpm : 1085...1115

4th rack travel in: 1200

Speed rpm : 0,00...1,00

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 375 Speed Rack travel in mm: 6.10

Testing:

Speed : 150 rpm Minimum rack trave: 19,00 : 375 Speed rpm

Rack travel in mm : 5,80...6,40

Rack travel in mm: 3.30 : 440...460 Speed rpm rpm : 580 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1000 1st speed Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,60...9,80

rpm : 500 3rd speed

Rack travel in m: 9,90...10,20

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 71,5...76,5

rpm : 550 Speed Del. quantity cm3/: <74,5 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9,00 Speed rpm : 1040

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 111.0...117.0 1000 s: (-)

HIGH IDLE

1st version

: 1100 Speed rpm Del.quantity cm3/: 7.5...15,5 1000 s: (-)

LOW IDLE

Speed : 375 Lbw

Del.quantity cm3/: 12,5...16,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

625

#### Note remarks

Test sheet : CAS 8,3 p Edition : 04.08.89 Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 158

Injection pump

Pump designation : PES4A85D42OLS2263

Governor

Governor design. : RSV375...975A2B543DR

Customer-spec. information Customer : CASE

: A 504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing Tolerance + - 0: 0.50 (0.75)

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05 100 s: (-)

rpm : 200 3rd speed

Rack travel in mm : 6,00 Del.quantity cm3/ : 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Del.quantity : 62,0...64,0

RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10,50

Speed rpm : 1000...1030

2nd rack travel in: 4,10

Speed rpm : 1085...1115

4th rack travel in: 1200

rpm : 0,00...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

Speed rpm: 375 Rack travel in mm: 7,50

**G26** 

Testing:

Speed rpm : 150 Minimum rack trave: 19,00

Speed rpm: 375
Rack travel in mm: 7,20...7,80

Rack travel in mm: 5.25 rpm : 440...460

Speed rpm : 640 Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 975 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70 3rd speed rpm : 450 Rack travel in m: 10,10...10,40

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 74.0...77.0 1000 s: (-)

Speed rpm : 500 Del.quantity cm3/ : <76.0 1000 s: (-)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 1015

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 126,0...132,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm: 1075
Del.quantity cm3/: 10,5...18,5
1000 s: (-)

LOW IDLE

rpm\_ : 375 Speed

Del.quantity cm3/: 15,5...19,5

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control spring retainer.

Note remarks

: CAS 5,5 e 5 Test sheet Edition : 04.08.89

Replaces Test oil : ISO-4113

Combination no. : 0 400 874 159

Injection pump

Pump designation : PES4A85D420LS2263

Governor

Governor design: RSV375...1100A2B554D

Customer-spec. information Customer : CASE

Engine : A-336 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

: 1-3-4-2 Firing order

: 0-90-180-240 Phasing

G28

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,95

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

80,5...83,0 1000 : (-) Del.quantity

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 12,30

Speed rpm : 1125...1155

2nd rack travel in: 4,90

rpm : 1185...1215 Speed

4th rack travel in: 1300

rpm : 0,30...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 7,70

Testing:

Speed rpm : 150 Minimum rack trave: 19,00

Speed rpm: 375
Rack travel in mm: 7,40...8,00

Rack travel in mm: 4.35 rpm : 440...460 rpm : 580 Speed

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 900

Rack travel in m: 9,30...9,50

3rd speed rpm : 500

Rack travel in m: 9,40...9,70

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 84,0...90,0 1000 s: (-)

Speed rpm : 650 Del.quantity cm3/ : <89,0

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 124,0...134,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200

Del.quantity cm3/: 6,5...14,5 1000 s: (-)

LOW IDLE

Speed rpm : 375

Del.quantity cm3/: 18.5...22,5 1000 s: (-)

# H01

#### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet Edition : CAS 4,9 a 1 : 01.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 160

Injection pump

Pump designation : PES4A85D420LS2263

Governor

Governor design. : RSV375...1000A2B547D

Customer-spec. information Customer

Engine : A 301 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure\_bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 Prestroke mm

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,35...4,55

100 s: (-)

2nd speed rpm : 200 Rack travel in mm : 6,00

Del.quantity cm3/: 1.15...1,75 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travet in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity 0, . . . . 71, . . . . . . . . . . . . . . . . . . 1000 : (69,0...72,0)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.20

Speed rpm : 1030...1050

2nd rack travel in: 5,60 Speed rpm : 1065...1095 4th rack travel in: 1200

Speed rpm : 0,20...1,20

LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out burper spring

Speed rpm: 37.5 Rack travel in mm: 7,50

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,40...7,60

Rack travel in mm : 4.00 Speed rpm : 450...470 Speed rpm : 600 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 9,00 2nd speed rpm : 300 Rack travel in m: 9,80...9,90 3rd speed rpm : 400 Rack travel in m: 10,50...10,70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 85,5...88,5 1000 s: (84,5...89,5) Speed rpm : 500 Del.quantity cm3/ : <89.5 1000 s: (-) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 1040...1055

#### STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 124,0...135,0 1000 s: (-)

#### HIGH IDLE

1st version Speed rpm : 1090 Del.quantity cm3/ : 9.5...17.5 1000 s: (-)

#### LOW IDLE

Speed rpm: 375 Del.quantity cm3/: 15,5...19,5 1000 s: (-)

### Remarks:

#### Note remarks

Test sheet : CAS 1 a 2 Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 162

Injection pump

Pump designation : PES4A80D420LS2263

Governor

Governor design. : RSV375...1000A2B518D

Customer-spec. information Customer

Engine : A 267 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 : (2,10...2,30) Prestroke mm Rack travel in mm: 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

H04

#### BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00 Del.quantity cm3/ : 6,85...7,65

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 1,35...2,15

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0,30...0,70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 62,5...64,5

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10,90

Speed rpm : 1025...1055

2nd rack travel in: 4,60

Speed rpm : 1085...1115

4th rack travel in: 1200

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 6,10

Testing:

Speed rpm : 150 Minimum rack trave: 19,00

Speed rpm : 375 Rack travel in mm : 5,80...6,40

Rack travel in mm: 3.30 Speed rpm : 440...460

: 580 Speed rpm Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,60...9,80

3rd speed rpm : 500

Rack travel in m: 9,90...10,20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 71,5...76,5

1000 s: (-)
Speed rpm : 550
Del.quantity cm3/ : <74,5

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 1040 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 111,0...117,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1100

Del.quantity cm3/ : 7,5...15,5

1000 s: (-)

LOW IDLE

Speed rpm : 375

Del.quantity cm3/: 12,5...16,5

1000 s: (-)

**H05** 

#### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CAS 5,5 e 4 Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 173

Injection pump

Pump designation : PES4A85D420LS2263

Governor

Governor design. : RSV375...1100A2B626D

Customer-spec. information Customer : CASE

: A 336 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 Prestroke mm

: (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Phasing : 0-90-180-27 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm: 12,00
Del.quantity cm3/: 7.25...8,05
100 s: (-)
3rd speed rpm: 200 Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 92,5...94,5

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 13,20

Speed rpm : 1125...1155

2nd rack travel in: 5,00 Speed rpm : 1185...1215 4th rack travel in: 1280 Speed rpm : 0,00...1,50

LOW IDLE 1 Control lever

position degrees: 15...23

Setting point w/out bumper spring

H<sub>0</sub>6

Speed rpm : 375 Rack travel in mm : 7,80 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 375 Rack travel in mm: 7.5...8,1 Rack travel in mm: 4.15 Speed rpm: 440...460 Speed rpm: 560 Maximum rack trave: 1,50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 500 Rack travel in m: 9,40...9,70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 98,5...102,5 1000 s: (-) rpm : 650 Speed Del.quantity cm3/: <101,5 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,00 Speed rpm : 1140 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 126,0...132,0 1000 s: (-) HIGH IDLE

1st version Speed rpm : 1200 Del.quantity cm3/ : 8,5...12,5 1000 s: (-)

Speed rpm : 375
Del.quantity cm3/ : 18,5...22,5
1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

LOW IDLE

Note remarks

Test sheet : CAS 5,5 e 3 Edition Replaces : 07.08.89

Test oil : ISO-4113

Combination no. : 0 400 874 175

Injection pump

Pump designation : PES4A85D420LS2263

Governor

Governor design. : RSV375...1100A2B649D

Customer-spec. information Customer : CASE

Engine : A 336 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270 Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

rpm : 1000 2nd speed Rack travel in mm: 12,00

Del.quantity cm3/: 7,25...8,05

100 s: (-)

3rd speed rpm: 200

Park travel in mm: 700

Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 73,5...75,5

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 11,50

Speed rpm : 1125...1155

2nd rack travel in: 5,10

Speed rpm : 1185...1215

4th rack travel in: 1300

Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

**80H** 

Speed rpm : 375 Rack travel in mm : 7,20 Testing: Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375 Rack travel in mm : 6,90...7,50 Rack travel in mm: 4.40

rpm : 440...460 rpm : 600 Speed Speed Maximum rack trave: 1,00

TORQUE CONTROL Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 900 Rack travel in m: 9,30...9,50

3rd speed rpm : 500 Rack travel in m: 9,40...9,70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 76,5...79,5
1000 s: (-)

rpm : 650 Speed Del.quantity cm3/: <78,0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

HIGH IDLE

1st version

Speed rpm : 1200 Del.quantity cm3/: 6,5...14,5 1000 s: (-)

LOW IDLE

rpm : 375 Speed

H09

Del.quantity cm3/: 15,...19,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CAS 5.5 e 2
Edition : 31.07.89
Replaces : Test oil : ISO-4113

Combination no. : 0 400 874 176

Injection pump

Pump designation : PES4A85D420LS2263

Governor

Governor design.: RSV375...1100A2B650D

Customer-spec. information Customer : CASE

: A-336BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,35...4,55

100 s: (-)

2nd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 1,15...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 81.0...82.0 1000 : (80,0...83.0)

RATED SPEED

1st version Control lever

position degrees: 35...43

Testing:

1st rack travel in: 12.15

Speed rpm: 1130...1150 2nd rack travel in: 3,30

Speed rpm : 1205...1235

4th rack travel in: 1280

Speed rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 7,70

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 7,50...7,80

Rack travel in mm : 2.60 Speed rpm : 470...490 rpm : 600 Speed Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 900 Rack travel in m: 9,30...9,50 3rd speed rpm : 450 Rack travel in m: 9,50...9,70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 81.0...90.0 1000 s: (86.0...91.0) Speed rpm : 650 Del.quantity cm3/ : <89.0 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,00 rpm : 1140...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 124,0...134,0 1000 s: (-) HIGH IDLE 1st version Speed rpm : 1200 Del.quantity cm3/ : 6,50...14,50 1000 s: (-) LOW IDLE

1000 s: (-)

Remarks:

#### Note remarks

: CAS 5,5 d 3 Test sheet Edition : 25.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 204

Injection pump

Pump designation : PES4A85D420LS2459 EP type number : 0 410 884 954

Governor

: RSV375...1100A2B649D Governor design.

: 0 420 235 163 Governer no.

Customer-spec. information Customer : CASE

: A 336 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing Tolerance + - 0: 0,50 (0,75)

H12

#### BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm: 11,50

Del.quantity cm3/: 7,5...7,6

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed Rack travel in mm: 7,20

Del.quantity cm3/: 1,6...2,2

100 s: (-) cm3 : 0.2Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 74,6...75,6 Del quantity

1000 : (-) cm3 : 3.0 1000 : (-) Spread

RATED SPEED

1st version Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10,50
Speed rpm: 1140...1155
2nd rack travel in: 3,60
Speed rpm: 1205...1235

4th rack travel in: 1300

Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 375 Speed

Rack travel in mm: 6.70

Testing:

Speed rpm : 150 Minimum rack trave: 19.00

Speed rpm: 375
Rack travel in mm: 7,10...7,30

Rack travel in mm: 3,00 Speed rpm: 470...490

Speed rpm: 600 Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 11,50 2nd speed rpm : 900

Rack travel in m: 11,80...11,90

3rd speed rpm : 500

Rack travel in m: 11,95...12,25

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 750 rpm

Del.quantity cm3/: 75,8...78,8

1000 s: (-) cm3 : 4,0 Spread

1000 s: (-)

Speed rpm : 650 Del.quantity cm3/: <78,2

1900 s: (-)

cm3 : 4.0Spread

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10,50

Speed rpm : 1140...1155

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 129,0...135,0

1000 s: (-)

Rack travel in mm : 17,70...18,00

HIGH IDLE

1st version

Speed rpm : 1200 Rack travel in mm: 4,90

Del.quantity cm3/: 6,3...12,3

1000 s: (-)

cm3 : 3,0 Spread 1000 s: (-)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 7,20
Del.quantity cm3/ : 15,7...21,7
1000 s: (-)
Spread cm3 : 2,0

1000 s: (-)

Remarks:

Note remarks

: CAS 5,5 d 2 : 25.08.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 874 205

Injection pump

Pump designation : PES4A85D42OLS2459

EP type number : 0 410 884 954

Governor

Governor design. : RSV375...1100A2B650D

Governer no. : 0 420 235 164

Customer-spec. information Customer

Engine : A-336 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187 P (CASE)

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12,05...12,15

Del.quantity cm3/: 8,2...8,3

100 s: (-)

Spread cm3 : 0,3

100 s: (-)

2nd speed rpm : 375 Rack travel in mm: 7,50

Del.quantity cm3/: 1,8...2,4

100 s: (-)

cm3 : 0,2 100 s: (-) Spread

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 82,0...83,0

1000 : (-)

: 3,0 cm3 Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 11,10

Speed rpm : 1140...1155

2nd rack travel in: 3,40 Speed rpm: 1205...1235 4th rack travel in: 1280

Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever position degrees: 13...21 Setting point w/out bumper spring rpm : 375 Rack travel in mm: 7,20 Testing: Speed rpm : 150 Minimum rack trave: 19,00
Speed rpm: 375
Rack travel in mm: 7,60...7,80
Rack travel in mm: 2,60
Speed rpm: 470...490
Speed rpm: 470...490 Speed rpm : 600 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12,10 2nd speed rpm : 900 Rack travel in m: 12,60...12,80 3rd speed rpm : 450 Rack travel in m: 12,80...13,00 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 86.0...89.0 1000 s: (-) Spread cm3 : 4,0 1000 s: (-) Speed rpm : 650 Del.quantity cm3/ : <88,5 1000 s: (-) Spread cm3: 4,0 1000 s: (-) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 128,0...134,0

1000 s: (-)

Rack travel in mm : 17,50...17,60

HIGH IDLE

1st version

H15

Speed rpm: 1200
Rack travel in mm: 5,10
Del.quantity cm3/: 8,2...14,2

1000 s: (-) Spread cm3 : 3.0 1000 s: (-)

.....

LOW IDLE

Speed rpm : 375
Rack travel in mm : 7,50

Del.quantity cm3/: 18,0...24,0

1000 s: (-) Spread cm3 : 2.0 1000 s: (-)

Remarks:

Note remarks

: CAS 5.5 d 1 : 31.07.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 874 209

Injection pump

Pump designation : PES4A85D420LS2459

Governor

Governor design. : RSV375...1000A2B762D

Customer-spec. information Customer : CASE

: A-336 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187 P (CASE)

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12,60

Del.quantity cm3/: 8,6...8,7

100 s: (8,4...8,8)

cm3 : 0.3Spread

100 s: (-)

rpm : 375 2nd speed Rack travel in mm : 8,00 Del.quantity cm3/: 1.8...2.1 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 85,5...87,5 Del quantity 1000 : (84,5...88,5) cm3 : 3,0

Spread 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11,60

Speed rpm : 1040...1060

2nd rack travel in: 2,70

Speed rpm : 1115...1145

4th rack travel in: 1200

Speed rpm : 0,30...1,70

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 375 Rack travel in mm : 8,00 Testing:

rpm : 150 Speed

Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,80...8,20 Rack travel in mm: 2.95

Speed rpm : 410...430

Speed rpm: 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 12,60 2nd speed rpm : 700

Rack travel in m: 13,10...13,40 3rd speed rpm : 500

Rack travel in m: 13,10...13,50

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 91.5...96.5 1000 s: (90.5...97.5)

rpm : 600 Del.quantity cm3/: <95,0

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11,60

Speed rpm : 1040...1055

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120,0...130,0 1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 1100 Del.quantity cm3/: 9,5...15,5

1000 s: (-)

LOW IDLE

Rack travel in mm: 375

Del.quantity cm3/: 18,0...21,0

1000 s: (-)

#### Remarks:

Note remarks

Test sheet : CAS 8,3 j 5 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 008

Injection pump

Pump designation : PES6A80C420LS2054

Governor

Governor design. : RSV300...1000A2B187D

Customer-spec. information Customer : CASE

Engine : A 401 D

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 9,00

Del.quantity cm3/: 5,55...6,05

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 15,00

Del.quantity cm3/: 11,55...12,85

100 s: (-)

3rd speed rpm : 200

Rack travel in mm: 6,00

Del.quantity cm3/: 1,35...2,25

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Del.quantity : 63,5...65,5

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 7,70 Speed rpm : 1015...1045

2nd rack travel in: 4,00 Speed rpm : 1085...1115

4th rack travel in: 1180

rpm : 0,00...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

```
Speed
            rpm : 300
Rack travel in mm: 6,00
Testing:
             rpm : 100
Speed
Minimum rack trave: 19,00
Speed
            rpm : 300
Rack travel in mm : 5,70...6,30
Rack travel in mm: 2.30
Speed rpm: 390...410
Speed rpm: 500
Maximum rack trave: 1,00
TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 980
  Rack travel in m: 9,00
2nd speed rpm : 800
  Rack travel in m: 9,60...9,80
3rd speed rpm : 700
  Rack travel in m: 9,80...10,10
4th speed rpm : 400
  Rack travel in m: 9,80...10,10
FUEL DELIVERY CHARACTERISTICS
1st version
            rpm : 700
Speed
Del.quantity cm3/: 70.0...74.0
1000 s: (-)
Speed
            rpm : 600
Del.quantity cm3/: 70,5...74,5
1000 s: (-)
BREAKAWAY
1st version
1mm rack travel less than
 full load rack tr: 8,00
Speed
            rpm : 1000...1015
STARTING FUEL DELIVERY
Speed rpm : 100
Del.quantity cm3/ : 77,0...85,0
            1000 s: (-)
HIGH IDLE
1st version
Speed
            rpm : 1050
Del.quantity cm3/: 11.5...21.5
1000 s: (-)
Remarks:
```

Adjustment without torque-control

H19

spring retainer with 1 mm less

#### Note remarks

Test sheet : CAS 8,3 ; 6 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 022

Injection pump

Pump designation : PES6A85C420LS2054

Governor

Governor design. : RSV300,..900A2B132DR

Customer-spec. information Customer : CASE

: A-401 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300

Phasing : 0-60-120-18 Tolerance + - 0 : 0,50 (0,75)

H20

Phasing

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 5,65...6,02

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm: 6,00

Del.quantity cm3/ : 1,35...2,25

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Decree: -3

rpm : 800

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 880 Speed

: 79,8...81,8 Del.quantity

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 35...43

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 6,50 Speed rpm : 300 Rack travel in mm : 6.40...6.60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900 Rack travel in m: 9,00 2nd speed rpm : 700

Rack travel in m: 9,20...9,50

3rd speed rpm : 600

Rack travel in m: 9,60...9,90

4th speed rpm : 450

Rack travel in m: 9,70...10,00

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 78,5...81,5 1000 s: (-)

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 900...915

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 77,0...86,0 1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm: 985
Del.quantity cm3/: 10,0...18,0
1000 s: (-)

Remarks:

#### Note remarks

Test sheet : CAS 8,3 f 8 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 077

Injection pump

Pump designation : PES6A80C420LS2264

Governor

Governor design: : RSV375...950A2B520DR

Customer-spec. information Customer : CASE

Engine : A 401 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar : 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

#### BEGINNING OF DELIVERY

Prestroke mm 25ء 25 . . . 25ء 25 : (2,10...2,30) Rack travel in mm: 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

H22

#### BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00 Del.quantity cm3/ : 6,85...7,65

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 1,35...2,15

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 930 Speed

Del.quantity : 61,5...63,5

#### RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 8,50

rpm : 985...1015 Speed

2nd rack travel in: 2,10

Speed rpm : 1085...1115

4th rack travel in: 1160

rpm : 0,00...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 23...31

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 6,00

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 5,70...6,30 Rack travel in mm: 3.95

rpm : 440...460 Speed

rpm : 600 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 930 Rack travel in m: 9,00 2nd speed rpm : 750

Rack travel in m: 9,50...9,70 3rd speed rpm : 450

Rack travel in m: 9,80...10,10

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 70,0...73,0

1000 s: (-)

rpm : 550 Speed Del.quantity cm3/: <72,0 1000 s: (-)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8,00 rpm : 960 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 111,0...115,0 1000 s: (-)

HIGH IDLE

1st version

rpm : 1040 Speed

Del.quantity cm3/: 10,5...18,5

1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/ : 12,5...15,5 1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

Test sheet Edition : CAS 8,3 f11 : 07.08.89

Replaces Test oil

: ISO-4113

Combination no. : 0 400 876 079

Injection pump

Pump designation : PES6A85C420LS2264

Governor

Governor design. : RSV375...1100A2B517D

Customer-spec. information Customer

: A 504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

rpm : 200 3rd speed Rack travel in mm : 6,00 Del.quantity cm3/ : 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 82,5...84,5

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 7,10

Speed rpm : 1165...1195

2nd rack travel in: 2,80 Speed rpm: 1235...1265

4th rack travel in: 1320

Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 17...25

Speed rpm Rack travel in mm: 7,50

Testing:

Speed : 100 rpm Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,20...7,80

Rack travel in mm: 4.65

rpm : 440...460 Speed

Speed rpm : 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,60...9,80

3rd speed rpm : 400

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

: 850 Speed rpm

Del.quantity cm3/: 90,0...93,0

1000 s: (-)

rpm : 750 Speed Del.quantity cm3/: <93.0 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 124,0...134,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200

Del.quantity cm3/: 14,5...22,5 1000 s: (-)

LOW IDLE

Speed rpm : 375

H25

Del.quantity cm3/: 18,5...22,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

#### Note remarks

Test sheet : CAS 8.3 f16 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 099

Injection pump

Pump designation: PES6A85D420LS2264

Governor

Governor design. : RSV375...925A2B544DR

Customer-spec. information Customer : CASE

Engine : A-401 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30) Rack travel in mm: 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

H26

#### BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-) 3rd speed rpm : 200

Rack travel in mm: 6,00

Del.quantity cm3/: 0,45...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 925 Speed

Del.quantity : 56,0...58,0

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 10,20

rpm : 950...980 Speed

2nd rack travel in: 6,60

Speed rpm : 985...1015

4th rack travel in: 1120

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 6,60

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm: 375

Rack travel in mm : 6,30...6,90

Rack travel in mm: 4.05 rpm : 440...460 Speed

Speed rpm : 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 925 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70
3rd speed rpm : 450

Rack travel in m: 10,30...10,60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 550
Del.quantity cm3/ : 65,5...69,5
1000 s: (-)

rpm\_ : 450 Speed Del.quantity cm3/: <68,0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 965

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 126,0...132,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1010 Del.quantity cm3/: 8,5...16,5 1000 s: (-)

LOW IDLE

1000 s: (-)

#### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CAS 8,3 f18 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 100

Injection pump

Pump designation : PES6A85C42OLS2264

Governor

Governor design. : RSV375...1000A2B546D

Customer-spec. information Customer : CASE

: A-401 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,85...5,35

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00

Del.quantity cm3/: 8,25...9,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm : 6,00

Del.quantity cm3/: 1,15...1,95

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Del.quantity : 59,0...61,0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 7,20

Speed rpm : 1035...1065

2nd rack travel in: 3,70 Speed rpm: 1085...1115 4th rack travel in: 1200

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

H28

Speed rpm : 375 Rack travel in mm: 6,50

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm: 6,20...6,80 Rack travel in mm: 3.80 rpm : 440...460 Speed

rpm : 600 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 980 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70
3rd speed rpm : 450

Rack travel in m: 9,90...10,20

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 64,0...67,0

1000 s: (-)

rpm : 550 Speed Del.quantity cm3/: <66.0 1000 s: (-)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 1020 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1090 Del.quantity cm3/ : 4,5...12,5

1000 s: (-)

LOW IDLE

Speed rpm : 375

J01

Del.quantity cm3/: 12,0...16,0

1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

Test sheet : CAS 8,3 f14 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 120

Injection pump

Pump designation : PES6A85C42OLS2264

Governor

Governor design. : RSV375...950A2B553DR

Customer-spec. information Customer : CASE

: A 401 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure\_bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm : 6,00

Del.quantity cm3/ : 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

: 59,0...61,0 Del.quantity

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 10,40 Speed rpm : 975...1005

2nd rack travel in: 4,50 Speed rpm: 1035...1065

4th rack travel in: 1140

rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 6,30

J02

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375

Rack travel in mm : 6,00...6,60

Rack travel in mm: 3.80 rpm : 440...460 rpm : 600 Speed

Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70

3rd speed rpm : 400

Rack travel in m: 10,30...10,60

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 72,0...76,0

1000 s: (-)

Speed rpm : 500 Del.quantity cm3/ : <74,5 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1045

Del.quantity cm3/: 6,5...14,5

1000 s: (-)

LOW IDLE

1000 s: (-)

#### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet Edition : CAS 8,3 f12 : 07.08.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 134

Injection pump

Pump designation : PES6A85C42OLS2264

Governor

Governor design. : RSV375...1050A2B567D

Customer-spec. information Customer

: A-451 @DT (T/C) Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 : (2,10...2,30) Prestroke mm

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm3/: 4,65...5,15

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

rpm : 1000 2nd speed Rack travel in mm: 12,00

Del.quantity cm3/: 8,45...9,45

100 s: (-)

rpm : 200 3rd speed

Rack travel in mm: 9,00 Del.quantity cm3/: 2,75...3,65

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 96,0...98,0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 12,10 Speed rpm : 1075...1105

2nd rack travel in: 5.40 Speed rpm: 1135...1165 4th rack travel in: 1260

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 14...22

Speed rpm : 375 Rack travel in mm: 7,40 Testing: Speed rpm : 150 Minimum rack trave: 19.00 Speed rpm: 375 Rack travel in mm: 7.10...7,70 Rack travel in mm: 4.15 rpm : 440...460 Speed rpm : 580 Speed Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 9,00 2nd speed rpm : 900 Rack travel in m: 9,10...9,30 3rd speed rpm : 500 Rack travel in m: 9,30...9,60 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 100,5...104,5 1000 s: (-) Speed rpm: 650 Del.quantity cm3/: <103,5 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8,00 rpm : 1090 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 124,0...134,0 1000 s: (-) HIGH IDLE 1st version Speed rpm : 1150 Del.quantity cm3/ : 9.5...19.5 1000 s: (-) LOW IDLE Speed rpm : 375

Del.quantity cm3/: 15,5...19,5 1000 s: (-)

Remarks:

J05

Note remarks

Test sheet : CAS 8,3 f15 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 135

Injection pump

Pump designation : PES6A85C420LS2264

Governor

Governor design.: RSV375...950A2B553DR

Customer-spec. information Customer : CASE

: A 401 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzie holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

: 2,15...2,25 Prestroke mm : (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0,50 (0,75)

J06

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm : 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm: 12,00
Del.quantity cm3/: 7,25...8,05
100 s: (-)
3rd speed rpm: 200

Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Del.quantity : 59,0...61,0

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 10,40 Speed rpm : 975...1005

2nd rack travel in: 4,50 Speed rpm: 1035...1065 4th rack travel in: 1140

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 6,30

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 6,00...6,60

Rack travel in mm: 3.80

rpm : 440...460

rpm : 600 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70 3rd speed rpm : 400

Rack travel in m: 10,30...10,60

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 72,0...76,0 1000 s: (-) Speed rpm : 500 Del.quantity cm3/: <74,5

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00 rpm : 990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1045 Del.quantity cm3/ : 6,5...14,5 1000 s: (-)

LOW IDLE

rpm : 375 Speed

Del.quantity cm3/: 12,5...16,5

1000 s: (-)

# J07

#### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

#### Note remarks

Test sheet : CAS 8,3 f17 : 07.08.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 136

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design.: RSV375...925A2B544DR

Customer-spec. information Customer : CASE

Engine : A-401 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

J08

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

rpm : 200 3rd speed Rack travel in mm: 6,00

Del.quantity cm3/: 0,45...1,75 100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...C.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 925 Speed

Del.quantity : 56,0...58,0 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 10,20

Speed rpm : 950...980

2nd rack travel in: 6,60

Speed rpm : 985...1015

4th rack travel in: 1120

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 6,60

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 rpm : 375 Speed

Rack travel in mm : 6,30...6,90

Rack travel in mm: 4.05 rpm : 440...460 Speed rpm : 600 Speed

Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 925 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70 d speed rpm : 450

3rd speed

Rack travel in m: 10,30...10,60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 550 rpm

Del.quantity cm3/: 65,5...69,5 1000 s: (-)

Speed rpm : 450 Del.quantity cm3/: <68,0

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 965

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

rpm : 1010 Speed

Del.quantity cm3/: 8,5...16,5 1000 s: (-)

LOW IDLE

Speed rpm : 375

Del.quantity cm3/: 12,5...16,5

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

Test sheet : CAS 8,3 f19 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 137

Injection pump

Pump designation : PES6A85C420LS2264

Governor

Governor design. : RSV375...1000A2B546D

Customer-spec. information Customer : CASE

Engine : A-401 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 rnasing Tolerance + - 0

: 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 4,85...5,35

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00

Del.quantity cm3/: 8,25...9,05 100 s: (-)

3rd speed rpm : 200 Rack travel in mm : 6,00

Del.quantity cm3/ : 1,15...1,95

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

: 59,0...61,0 Del.quantity

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 7,20

Speed rpm : 1035...1065

2nd rack travel in: 3,70

Speed rpm : 1085...1115

4th rack travel in: 1200

Speed rpm : 0,00...1,00

LOW IDLE 1 Control lever

position degrees: 18...26

rpm : 375 Speed Rack travel in mm: 6,50

Testing:

Speed : 150 rpm Minimum rack trave: 19,00 : 375 Speed rpm

Rack travel in mm : 6,20...6,80

Rack travel in mm : 3.80 : 440...460 rpm rpm : 600 Speed

Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 980 Rack travel in m: 9,00 rpm : 800 2nd speed

Rack travel in m: 9,50...9,70

3rd speed rpm : 450

Rack travel in m: 9,90...10,20

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 64,0...67,0

1000 s: (-)

rpm : 550 Speed Del.quantity cm3/: <66,0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 1020

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

: 1090 Speed rpm Del.quantity cm3/: 4,5...12,5 1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/: 12,0...16,0 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CAS 8,3 f 3 Test sheet Edition : 07.08.89

Replaces Test oil : ISO-4113

Combination no. : 0 400 876 139

Injection pump

Pump designation : PES6A85C420LS2264

Governor

Governor design. : RSV375...1100A2B517D

Customer-spec. information Customer : CASE

: A 504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30) Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 1100

Del.quantity : 82,5...84,5

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 7,10

Speed rpm : 1165...1195

2nd rack travel in: 2,80 Speed rpm: 1235...1265

4th rack travel in: 1320 Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 17...25

Speed rpm: 375 Rack travel in mm: 7,50

Testing:

Speed rpm : 100 Minimum rack trave: 19,00 rpm : 375

Rack travel in mm : 7,20...7,80 Rack travel in mm: 4.65

rpm : 440...460 Speed rpm: 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00

2nd speed rpm: 800

Rack travel in m: 9,60...9,80

3rd speed rpm: 400

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 850

Del.quantity cm3/: 90,0...93,0

1000 s: (-)

Speed rpm: 750 Del.quantity cm3/: <93.0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1140...1155

STARTING FUEL DELIVERY

HIGH IDLE

1st version

Speed rpm : 1200

Del.quantity cm3/: 14,5...22,5

1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/: 18,5...22,5

1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

Test sheet : CAS 8,3 f13 Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 140

Injection pump

Pump designation : PES6A90C420LS2264

Governor

Governor design. : RSV375...1050A2B567D

Customer-spec. information Customer : CASE

Engine : A-451 BDT (T/C)

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter

x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,65...5,15

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00 Del.quantity cm3/: 8,45...9,45

100 s: (-)

rpm : 200 3rd speed

Rack travel in mm: 9,00 Del.quantity cm3/: 2,75...3,65

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 96,0 1000 : (-) : 96,0...98,0

RATED SPEED

1st version Control lever

position degrees: 35...43

Testing:

1st rack travel in: 12,10

rpm : 1075...1105 Speed

2nd rack travel in: 5,40

Speed rpm : 1135...1165

4th rack travel in: 1260

rpm : 0,00...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 14...22

Speed rpm: 375 Rack travel in mm: 7,40 Testing: Speed rpm : 150 Minimum rack trave: 19,00 rpm : 375 Speed Rack travel in mm : 7,10...7,70 Rack travel in mm : 4.15 rpm : 440...460 rpm : 580 Speed Speed Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 9,00 2nd speed rpm : 900 Rack travel in m: 9,10...9,30 3rd speed rpm : 500 Rack travel in m: 9,30...9,60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 100,5...104,5 1000 s: (-) rpm : 650 Speed Del.quantity cm3/: <103.5 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,00 Speed rpm : 1090 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 124,0...134,0 1000 s: (-) HIGH IDLE 1st version Speed rpm : 1150 Del.quantity cm3/ : 9,5...19,5 1000 s: (-)

Del.quantity cm3/: 15,5...19,5 1000 s: (-)

Remarks:

LOW IDLE

rpm : 375

Speed

Note remarks

Test sheet : CAS 8,3 f 9 Edition Replaces Test oil : 07.08.89

: ISO-4113

Combination no. : 0 400 876 149

Injection pump

Pump designation : PES6A85C42OLS2264

Governor

Governor design. : RSV375...1050A2B521D

Customer-spec. information Customer

Engine : A-451 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 230 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0: 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000
Rack travel in mm : 12,00
Del.quantity cm3/ : 7,25...8,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 0.95...1.75 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Del.quantity : 76,0...78,0 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11,60
Speed rpm: 1075...1105
2nd rack travel in: 5,20
Speed rpm: 1135...1165
4th rack travel in: 1260

Speed rpm : 0,30...1.00

LOW IDLE 1 Control lever

position degrees: 16...24

Speed rpm : 375 Rack travel in mm: 7.50

Testing:

Speed : 150 rpm Minimum rack trave: 19,00 rpm : 375 Speed

Rack travel in mm: 7,20...7,80 Rack travel in mm: 4.50

rpm : 440...460 rpm : 600 Speed

Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70

3rd speed rpm : 500

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 82,5...86,5

1000 s: (-)

rpm : 550 Speed Del.quantity cm3/: <85,5 1000 s: (-)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

HIGH IDLE

1st version

rpm : 1150 Speed

Del.quantity cm3/: 8,5...16,5

1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/: 15,5...19,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

BOSCH INJ. PUMP TEST SPECIFICATIONS 1st speed rpm: 1000 Note remarks Rack travel in mm : 6,00 Test sheet : VMA 7,3 b Del.quantity cm3/: 2,1...2,9 Edition : 23.08.89 Replaces 100 s: (-) Test oil : ISO-4113 2nd speed rpm : 1000 Rack travel in mm: 9,00 Combination no. : 0 400 876 152 Del.quantity cm3/: 6,0...6,5 100 s: (-) cm3 : 0,4 Injection pump Pump designation : PES6A85D41ORS2332 Spread 100 s: (-) Governor Governor design. : RSV250...900A1B1029L 3rd speed rpm : 200 Rack travel in mm: 6,00 Customer-spec. information Del.quantity cm3/: 0,1...1,0 Customer : VM MOTORI 100 s: (-) Engine : 116 DAN GUIDE SLEEVE POSITION Control-lever position TEST BENCH REQUIREMENTS Degree: -3 rpm : 800 Speed Test oil Rack travel in mm : 0,30...0,70 inlet temp. °C : 38...42 Governor spring pre-tension Inlet press., bar: 1.0 Click setting x :? Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP assembly : 0 681 343 009 1st version Opening rpm : 880 Speed pressure, bar : 172...175 Del. quantity : 83,5...85,5 1000 : (-) : 1 680 750 014 Test lines RATED SPEED Outside diameter 1st version x Wall thickness Control lever : 6,00x2,00x600 x Length mm position degrees: 46...54 (A) Injection pump setting values Testing: Insp. values in parentheses 1st rack travel in: 7,60 Speed rpm : 965...995 Set equal delivery quant. 2nd rack travel in: 2,10 Speed rpm: 1035...1065 4th rack travel in: 1150 per values BEGINNING OF DELIVERY Speed rpm : 0,00...1,00 : 3,70...3,75 : (3,65...3,80) Prestroke mm LOW IDLE 1 Rack travel in mm : 9,00...12,00 Control lever : 1-5-3-6-2-4 Firing order position degrees: 20...28 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 6.00 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Testing: Speed rpm : 100

Minimum rack trave: 19,00

rpm : 250

Speed

BASIC SETTING

Rack travel in mm: 5,70...6,30 Speed rpm: 450 Maximum rack trave: 1,00

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880 Rack travel in m: 9,00 2nd speed rpm : 400
Rack travel in m: 9.00
3rd speed rpm : 300

Rack travel in m: 10,20...10,80

### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm: 910

## LOW IDLE

Speed rpm : 200 Del.quantity cm3/ : 1,5...9,5 1000 s: (<1,5)

### Remarks:

Note remarks

Test sheet : CAS 8,3 f20 Edition : 07.08.89

Replaces : ISO-4113 Test oil

Combination no. : 0 400 876 153

Injection pump

Pump designation : PES6A85C420LS2264

Governor

Governor design. : RSV375...1100A2B600D

Customer-spec. information Customer : CASE

Engine : A 504 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

cm3 : 0,4 Spread

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1080 Speed

Del.quantity : 82,5...84,5

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 7,40

Speed rpm : 1165...1195

2nd rack travel in: 2,80 Speed rpm : 1235...1165

4th rack travel in: 1320

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 18...26

Speed rpm: 375 Rack travel in mm: 7,50

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,20...7,80 Rack travel in mm: 4.70

rpm : 440...460 Speed

Speed rpm : 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,60...9,80

3rd speed rpm : 400

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

: 850 Speed rpm

Del.quantity cm3/: 90,0...93,0 1000 s: (-) Speed rpm: 750

Del.quantity cm3/: <93,0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 1120 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200 Del.quantity cm3/ : 14,5...22,5 1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/: 18,5...22,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

: CAS 8,3 f21 Test sheet Edition : 07.08.89

Replaces

Test oil : ISO-4113

: 0 400 876 154 Combination no.

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design: RSV375...950A2B553DR

Customer-spec. information Customer : CASE

: A-401 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 691 343 009

**Opening** 

pressure, bar : 172...175

: 9 681 230 706 Test lines

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0: 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-) 3rd speed rpm : 200

Rack travel in mm: 6,00 Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Del.quantity : 59,0...61,0

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 10,40 Speed rpm : 975...1005

2nd rack travel in: 4,50

Speed rpm : 1035...1065

4th rack travel in: 1140

rpm : 0,00...1,00 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 6,30

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 rpm : 375 Speed

Rack travel in mm : 6,00...6,60

Rack travel in mm: 3.80 rpm : 440...460 rpm : 600 Speed Speed

Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70

3rd speed rpm : 400

Rack travel in m: 10,30...10,60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 72,0...76,0

1000 s: (-)

rpm : 500 Speed Del.quantity cm3/ : <74,0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 990

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm: 1045 Del.quantity cm3/: 6,5...14,5 1000 s: (-)

LOW IDLE

Speed rpm\_ : 375

Del.quantity cm3/: 12,5...16,5

1000 s: (-)

### Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

#### Note remarks

Test sheet : CAS 8,3 f22 : 07.08.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 155

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design. : RSV375...925A2B544DR

Customer-spec. information Customer : CASE

: A-401 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

: 2.15...2.25 : (2.10...2.30) Prestroke mm

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing : U-6U-12U-18 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed Rack travel in mm: 12,00

Del.quantity cm3/ : 7,25...8,05

100 s: (-)

rpm : 200 3rd speed Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 925 Speed

Del.quantity : 56,0...58,0

RATED SPEED

1st version

Control lever

position degrees: 14...22

Testing:

1st rack travel in: 10,20

rpm : 950...980 Speed

2nd rack travel in: 6,60

rpm : 985...1015 Speed

4th rack travel in: 1120

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 6,60 Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 6,60...6,90

Rack travel in mm: 4.05 rpm : 440...460 Speed : 600 rpm Speed

Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 925 1st speed Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70
3rd speed rpm : 450

Rack travel in m: 10,30...10,60

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 550 Speed

Del.quantity cm3/: 65,5...69,5

1000 s: (-)

: 450 Speed rpm Del.quantity cm3/: <68,0

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 965 Speed

STARTING FUEL DELIVERY

rpm\_ : 100 Speed

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm: 1010 Del.quantity cm3/: 8,5...16,5 1000 s: (-)

LOW IDLE

rpm : 375 Speed

Del.quantity cm3/: 12,5...16,5

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

Test sheet Edition : CAS 8,3 f23 : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 156

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design. : RSV375...1000A2B546D

Customer-spec. information Customer : CASE

Engine : A-401 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30) Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,85...5,35

100 s: (-)

cm3 : 0,4Spread

100 s: (-)

2nd speed rpm : 10000

Rack travel in mm : 12,00 Del.quantity cm3/ : 8,25...9,05

100 s: (-) rpm : 200

3rd speed Rack travel in mm: 6,00

Del.quantity cm3/ : 1,15...1,95

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Del.quantity : 58,0...60,0

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 7.20 Speed rpm : 1035...1065 2nd rack travel in: 3.70 Speed rpm : 1085...1115

4th rack travel in: 1200

Speed rpm : 0,00...1,00

LOW IDLE 1 Control lever

position degrees: 18...26

Speed rpm : 375 Rack travel in mm : 6,50

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 rpm : 375 Speed

Rack travel in mm: 6,20...6,80 Rack travel in mm: 3.80

: 440...460 Speed rpm

rpm : 600 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 980 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70 3rd speed rpm : 450

Rack travel in m: 9,90...10,20

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rom

Del.quantity cm3/: 61,0...67,0 1000 s: (-)

rpm : 550 Speed Del.quantity cm3/: <66.0

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 1020

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 126,0...132,0

1000 s: (-)

HIGH IDLE

1st version

: 1090 Speed rpm

Del.quantity cm3/: 11.5...12.5 1000 s: (-)

LOW IDLE

rpm : 375 Speed

Del.quantity cm3/: 12,5...16,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

Note remarks

Test sheet : CAS 8,3 f24 Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 157

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design. : RSV375...1100A2B517D

Customer-spec. information Customer : CASE

: A 504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 Prestroke mm

: (2,10...2,30) Rack travel in mm: 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Tolerance + - 0 : 0-50 /0 75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,65

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm: 12,00
Del.quantity cm3/: 7,25...8,05
100 s: (-)
3rd speed rpm: 200
Rack travel in mm: 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 82,5...84,5 Del.quantity

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 7,10

Speed rpm : 1165...1195

2nd rack travel in: 2,90 Speed rpm: 1235...1265

4th rack travel in: 1320

Speed rpm : 0,30...1.00

LOW IDLE 1 Control lever

position degrees: 17...25

rpm Speed Rack travel in mm: 7,50

Testing:

Speed : 150 rpm Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,20...7,80

Rack travel in mm: 4.65 rpm : 440...460 Speed rpm : 600 Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,60...9,80

3rd speed rpm : 400

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 850 rpm

Del.quantity cm3/: 90,0...93,0

1000 s: (-)

rpm : 750 Speed Del.quantity cm3/: <93.0 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 124,0...134,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200 Del.quantity cm3/ : 14,5...22,5 1000 s: (-)

LOW IDLE

Speed : 375 rpm

K01

Del.quantity cm3/: 18,5...22,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

Note remarks

Test sheet : CAS 8,3 f 4 Edition : 07.08.89

Replaces

: ISO-4113

Combination no. : 0 400 876 158

Injection pump

Pump designation : PES6A90D42ORS2264

Governor

Governor design. : RSV375...1050A2B567D

Customer-spec. information Customer : CASE

Engine : A-451 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,6...5,1

100 s: (-)

Spread cm3 : 0,5

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12,00 Del.quantity cm3/ : 8,4...9,4

100 s: (-) 3rd speed rpm : 200 Rack travel in mm: 9,00 Del.quantity cm3/ : 2,7...3,6

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Speed Del.quantity : 7000 : (-) : 95,5...97,5

RATED SPEED

1st version Control lever

position degrees: 35...43

Testing:

1st rack travel in: 12,10

Speed rpm : 1075...1205

2nd rack travel in: 5,40

Speed rpm : 1135...1165

4th rack travel in: 1260

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

K02

Speed rpm : 375 Rack travel in mm: 7,40 Testing: rpm : 150 Speed Minimum rack trave: 19,00 rpm : 375 Rack travel in mm : 7,10...7,70 Rack travel in mm: 4.15 Speed rpm: 440...460 Speed rpm: 580 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 9,00 2nd speed rpm : 900 Rack travel in m: 9,10...9,30 3rd speed rpm : 500 Rack travel in m: 9,30...9,60 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 99,0...103,0 1000 s: (-) Speed rpm : 650 Del.quantity cm3/: <102,0 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8,00 rpm : 1090...1105 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 124,0...134,0 1000 s: (-) HIGH IDLE 1st version rpm : 1150 Speed Del.quantity cm3/: 8,0...18,0 1000 s: (-)

LOW IDLE

rpm : 375

Speed

Kû3

Del.quantity cm3/: 15,25...19,25 1000 s: (-)

Note remarks

Test sheet : CAS 8,3 f 5 Edition : 31.07.89

Replaces

Test oil : ISO 4113

Combination no. : 0 400 876 159

Injection pump

Pump designation : PES6A85D42GLS2264

Governor

Governor design. : RSV375...1050A2B521D

Customer-spec. information Customer : CASE

Engine : A-451 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,35...4,55

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 6,00 Del.quantity cm3/ : 1.1...1.7

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 76,5...77,5

1000 : (75,5...79,5)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.75

Speed rpm : 1090...1105

2nd rack travel in: 3,20

Speed rpm : 1165...1195

4th rack travel in: 1280

Speed rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 7,50

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 7,40...7,60

Rack travel in mm: 2.35 Speed rpm : 470...490 Speed rpm : 600 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 9,00 2nd speed rpm : 800 Rack travel in m: 9,50...9,70 3rd speed rpm : 500 Rack travel in m: 9,70...10,00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650 Del.quantity cm3/: 83,0...86,0 1000 s: (82,0...89,0) Speed rpm : 550 Del.quantity cm3/ : <85,5 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,00 rpm : 1090...1105 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 124,0...134,0 1000 s: (-) HIGH IDLE 1st version rpm : 1150 Speed Del.quantity cm3/: 8,5...17,5 1000 s: (-) LOW IDLE Speed rpm: 375
Del.quantity cm3/: 15,5...19,5
1000 s: (-) Remarks: **APPLICATION** 

Tractor (tractor engines)

Note remarks

: CAS 8,3 f 2 Test sheet Edition : 07.80.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 161

Injection pump

Pump designation : PES6A85D42OLS2264

Governor

Governor design. : RSV375...1100A2B600D

Customer-spec. information Customer : CASE

: A-504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure\_bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05 100 s: (-)

rpm : 200 3rd speed Rack travel in mm: 6.00 Del.quantity cm3/: 0.95...1.75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

: 80,5...84,5 Del.quantity

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 14...22

Testing:

1st rack travel in: 12,50

Speed rpm : 1110...1130

2nd rack travel in: 2.80

Speed rpm : 1245...1265

4th rack travel in: 1320

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

K06

Speed rpm : 375 Rack travel in mm : 7,50

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,20...7,80

Speed rpm: 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,60...9,80

3rd speed rpm : 400

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 850

Del.quantity cm3/: 90,0...93,0

1000 s: (-)

Speed rpm: 750 Del.quantity cm3/: <93,0

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00 rpm : 1120 Speed

STARTING FUEL DELIVERY

HIGH IDLE

1st version

Speed rpm : 1200

Del.quantity cm3/: 14,5...22,5 1000 s: (-)

LOW IDLE

Speed rpm : 375

Del.quantity cm3/: 18,5...22,5 1000 s: (-)

K07

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : CAS 8,3 f 6 Edition : 31.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 164

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design. : RSV375...1100A2B605D

Customer-spec. information Customer : CASE

Engine : A-401 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 909

Opening.

pressure, bar : 172...175

Test lines : 9 681 2300 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2.10...2.30) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing rnasing : 0-60-120-18 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm3/: 4,35...4,55

100 s: (-)

rpm : 2000 2nd speed

Rack travel in mm : 6,00

Del.quantity cm3/ : 1,15...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1100 Speed

Del.quantity : 61,0...62,0 1000 : (60,0...63,0)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30 Speed rpm: 1140...1160 2nd rack travel in: 4,90

Speed rpm : 1185...1215

4th rack travel in: 1300

Speed rpm : 0,20...1,20

LOW IDLE 1 Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 6,50

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 6,40...6,60

**K08** 

Rack travel in mm : 2.75 Speed rpm : 470...490 Speed rpm : 600 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,90...10,10

3rd speed rpm : 450

Rack travel in m: 10,40...10,70

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 600
Del.quantity cm3/: 73,0...76,0
1000 s: (72,0...77,0)
Speed rpm: 500
Del.quantity cm3/: <75,0
1000 s: (-)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1155 Speed

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 129,0...139,0

1000 s: (-)

### HIGH IDLE

1st version

rpm : 1200 Speed Del.quantity cm3/: 6,5...14,5 1000 s: (-)

# LOW IDLE

Speed rpm : 375 Del.quantity cm3/ : 12,5...16,5

1000 s: (-)

Note remarks

Test sheet : CAS 8,3 o 1 Edition : 24.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 175

Injection pump

Pump designation : PES6A90D420LS2354

Governor

Governor design. : RSV375...1050A2B567D

Customer-spec. information Customer

: A-504 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.0

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 5,0...5,3

100 s: (-)

2nd speed rpm : 200 Rack travel in mm : 6,00 Del.quantity cm3/: 0,8...1,4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 98,0...99,0

Speed Del.quantity (-)

cm3 : 3.0 1000 : (-) Spread

RATED SPEED

1st version Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11,50

Speed rpm : 1090...1105

2nd rack travel in: 2,00

Speed rpm : 1185...1215

4th rack travel in: 1280

Speed rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 6,90

Testing:

Speed rpm : 150 Minimum rack trave: 19,00

Speed rpm: 375
Rack travel in mm: 7,30...7,50
Rack travel in mm: 2,50
Speed rpm: 470...490
Speed Speed : 600 rpm Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12,50 2nd speed : 900 rpm Rack travel in m: 12,70...12,80 3rd speed rpm : 500 Rack travel in m: 12,80...13,10 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 750 rpm Del.quantity cm3/: 101,0...105,0 1000 s: (-) Spread cm3 : 3,2 1000 s: (-) Speed : 650 rpm Del.quantity cm3/: <104,0 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.00 Speed rpm : 1090...1105 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 127,0...133,0 1000 s: (-) Rack travel in mm : 16,00...16,20 HIGH IDLE 1st version rpm : 1150 Speed Rack travel in mm : 5,40 Del.quantity cm3/ : 11,10...11,90 1000 s: (-) cm3 Spread 1000 s: (-) LOW IDLE rpm : 375 Speed

Rack travel in mm: 7,40

K11

Del.quantity cm3/: 1,6...2,0 1000 s: (-)

Note remarks

Test sheet : CAS 8,3 f25 : 04.08.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 183

Injection pump

Pump designation : PES6A85D420LS2264

Governor

: RSV375...1100A2B636D Governor design.

Customer-spec. information Customer : CASE

: A-504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press. bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

rpm : 200 3rd speed

Rack travel in mm : 6.00 Del.quantity cm3/ : 0.95...1.75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 92,5...94,5

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 12,90 Speed rpm: 1125...1155 2nd rack travel in: 5,10 Speed rpm: 1185...1215

4th rack travel in: 1260

Speed rpm : 0,30...1.50

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 7,90

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 7,60...8,20

Rack travel in mm: 5.3 rpm : 440...460

Speed rpm : 620 Maximum rack trave: 1,50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 900

Rack travel in m: 9,50...9,70

3rd speed rpm : 600

Rack travel in m: 9,70...10,00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 102,5...107,5 1000 s: (-)

rpm : 650 Speed Del.quantity cm3/: <105,5

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125,0...133,0 1000 s: (-)

HIGH IDLE

1st version

rpm : 1200 Speed

Deliquantity cm3/: 12,5...20,5 1000 s: (-)

LOW IDLE

rpm : 375 Speed

Del.quantity cm3/: 18,5...22,5 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less

control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet Edition : DEE 6,6 f 2 : 31.07.89

Replaces Test oil

: ISO-4113

Combination no. : 0 400 876 187

Injection pump

Pump designation : PES6A95D41ORS2380

Governor

Governor design. : RSV400...1100A2B648D

Customer-spec. information

Customer

: JOHN DEERE

Engine

: 6404 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter

x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 1,90...2,00 : (1,85...2,05) Prestroke mm

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

K14

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75) Phasing

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 7,6...8,0

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 6,00 Del.quantity cm3/ : 0,6...1,4

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity : 88,0...89,0 1000 : (86,0...91,0)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 16.00

Speed rpm : 1090...1110

2nd rack travel in: 2.30

Speed rpm : 1285...1315

4th rack travel in: 1400

Speed rpm : 0.20...1.20

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 5,60

Testing:

Speed rpm: 100 Minimum rack trave: 19,00

Speed rpm: 330

Rack travel in mm : 9,60...12,00 Rack travel in mm: 2,80 Speed rpm: 530...570 rpm : 750 Speed Maximum rack trave: 1,00

Speed rpm : 400 Rack travel in mm: 5,60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 900

Rack travel in m: 9,30...9,40 3rd speed rpm : 750

Rack travel in m: 9,70...10,00 4th speed rpm : 450

Rack travel in m: 9,70...10,00

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 550 Speed hPa : 160 Pressure Rack travel mm : \*

Measurement

Speed 1/min : 550

1st pressure hPa : 400 Rack travel in m: \*\*

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750

Del.quantity cm3/: 100,0...102,0 1000 s: (98,0...104,0)

Aneroid pressure h: rpm : 550 Speed

Del.quantity cm3/: 66,0...72,0 1000 s: (64,0...74,0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 159,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200

Del.quantity cm3/: 18,5...24,5

1000 s: (-)

LOW IDLE

Speed rpm : 400

Del.quantity cm3/: 12,0...16,0

1000 s: (-)

Remarks:

\* Start of LDA (manifold-pressure compensator) movement

\*\* Ende der LDA-Bewegung Start-of-delivery mark at 140 angular displacement of the cam after start of delivery of cylinder 1

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : CAS 8,3 f 7 Edition : 31.07.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 191

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design. : RSV375...1050A2B667D

Customer-spec. information Customer : CASE

: A 451 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 750 706

Outside diameter

x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 : (2,10...2,30) Prestroke mm Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,35...4,55

100 s: (-)

rpm : 200 2nd speed

Rack travel in mm: 6,00 Del.quantity cm3/: 1,15...1,75

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 68,0...69,0 1000 : (67,0...70,0)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 8,00

Speed rpm : 1090...1105

2nd rack travel in: 5,80

Speed rpm : 1125...1155

4th rack travel in: 1260

20...1 rpm : 0,20...1 Speed

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 375 Rack travel in mm : 6,60

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm : 375

Rack travel in mm : 6,50...6,70

Speed rpm: 600 Maximum rack trave: 1,00 TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 9,00 2nd speed rpm : 800

Rack travel in m: 9,50...9,70 3rd speed rpm : 500 Rack travel in m: 9,80...10,20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 650
Del.quantity cm3/: 78,0...81,0
1000 s: (77,0...82,0)
Speed rpm: 550
Del.quantity cm3/: <80,0
1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 124,0...134,0 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1150 Del.quantity cm3/ : 6,5...14,5 1000 s: (-)

LOW IDLE

rpm : 375

Del.quantity cm3/: 12,5...16,5 1000 s: (-)

Note remarks

Test sheet : DEE 6,6 f 3 Edition : 31.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 194

Injection pump

Pump designation : PES6A95D410RS2380

Governor

Governor design.: RSV600...1100A2B687L

Customer-spec. information Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 1,90...2,00 Prestroke mm : (1,85,,2,05) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

K18

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm3/ : 7,6...8,0

100 s: (-)

2nd speed rpm : 200 Rack travel in mm : 6,00 Del.quantity cm3/ : 0,6...1,4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

85,5...87,5 1000 : (83,5...89,5) Del.quantity

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 8,60

Speed rpm : 1130...1150

2nd rack travel in: 2,70

Speed rpm : 1205...1235

4th rack travel in: 1300 Speed rpm: 0,30...1,00

LOW IDLE 1 Control lever

position degrees: 21...29

Setting point w/out bumper spring

rpm : 600

Rack travel in mm: 5,10

Testing:

rpm : 200 Minimum rack trave: 19,00 Speed rpm: 600

Rack travel in mm : 5,00...5,20

Speed rpm: 850 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9.00 2nd speed rpm : 500 Rack travel in m: 9.00 3rd speed rpm : 400

Rack travel in m: 9,70...10,30

### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 159,0...179,0 1000 s: (-)

# HIGH IDLE

1st version

Speed rpm: 1175 Del.quantity cm3/: 18,5...24,5 1000 s: (-)

## LOW IDLE

Speed rpm : 600

Del.quantity cm3/: 12.0...17.0 1000 s: (-)

# Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Note remarks

Test sheet : DEE 6,6 f 4 Edition : 31.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 206

Injection pump

Pump designation : PES6A95D410RS2380

Governor

Governor design. : RSV400...1100A7B701L

Customer-spec. information Customer : JOHN DEERE

: 6404 T Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar : 1.0

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00

: (1,85...2,05) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm : 9,00

Del.quantity cm3/ : 7,6...8,0

100 s: (-)

2nd speed rpm : 200 Rack travel in mm: 6,00 Del.quantity cm3/ : 0,6...1,4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1080

Del.quantity 

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 66...74

Testing:

1st rack travel in: 11.30

Speed rpm : 1090...1110

2nd rack travel in: 4,00 Speed rpm: 1145...1175 4th rack travel in: 1250

Speed rpm : 0,20...1,20

LOW IDLE 1 Control lever

position degrees: 25...33

Setting point w/out bumper spring

rpm : 400

Rack travel in mm : 6,00

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm: 400

Rack travel in mm : 5,90...6,10

Speed rpm: 650 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

K20

1st speed rpm : 1080 Rack travel in m: 9,00 2nd speed rpm : 400 Rack travel in m: 9.00 3rd speed rpm : 300

Rack travel in m: 10,10...10,80

### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1100...1110

# STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 159,0...179,0 1000 s: (-)

# HIGH IDLE

1st version

Speed rpm : 1150 Del.quantity cm3/: 11,5...17,5 1000 s: (-)

### LOW IDLE

rpm : 400 Speed Del.quantity cm3/: 12,0...16,0 1000 s: (-)

# Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : CAS 8,3 f26 Edition : 04.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 209

Injection pump

Pump designation : PES6A85D420LS2264

Governor

Governor design. : RSV375...875A7B696R

Customer-spec. information Customer : CASE

: A-504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump settime values Insp. values in paralleless Set equal delivery waste.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,15...2,25 : (2,10...2,30) Prestroke mm

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

K22

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05

100 s: (-)

3rd speed rpm : 200 Rack travel in mm : 6,00

Del.quantity cm3/: 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

: 98,5...101,5 Del.quantity

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 7.20
Speed rpm: 915...945
2nd rack travel in: 3.90
Speed rpm: 945...975
4th rack travel in: 1030

rpm : 0,30...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 26...34

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 8,00

Testing:

rpm : 150 Speed ? Minimum rack trave: 19,00

Speed rpm : 375

Rack travel in mm : 7,70...8,30

Rack travel in mm: 3,35 Speed rpm: 440...460 Speed rpm: 550 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875 Rack travel in m: 9,00 2nd speed rpm : 350

Rack travel in m: 9,20...9,80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900 Del.quantity cm3/ : 70,5...93,5 1000 s: (-)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8,00 Speed rpm : 880...895

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 126,0...132,0 1000 s: (-)

LOW IDLE

Speed rpm : 375 Del.quantity cm3/ : 15,5...23,5 1000 s: (-)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 5,7 g 18 Test sheet Edition : 30.05.88 Replaces : 25.3.88 Test oil : ISO-4113 Combination no. : 0 400 876 218 Injection pump Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031 Governor Governor design. : RSV350...1400A0C1080 : 0 420 232 408 Governer no. Customer-spec. information Customer : DAIMLER-BENZ Engine : OM 352 1st version kW : 92.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175

: 1 680 750 014 : 6.00X2.00X600 Insp. values in parentheses Set equal delivery quant. per values

Test lines Outside diameter x Wall thickness x Length mm (A) Injection pump setting values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.15...2.25 : (2.10...2.30) K24

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - 0 : 0.50 (0.75) BASIC SETTING rpm: 1400 1st speed Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 6.3...6.4 100 s: (6.1...6.6) Spread cm3 : 0.3100 s: (0.4) rpm : 350.0 2nd speed Rack travel in mm: 6.6...7.2 Del.quantity cm3/: 1.0...1.2 100 s: (0.8...1.4) cm3 : 0.2Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 3.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1400 : 63.0...64.0 Del.quantity 1000 : (61.0...66.0) cm3 : 3.00 Spread 1000 : (4.50) RATED SPEED 1st version Control lever position degrees: 68...76

Testing:

Speed

1st rack travel in: 8.70

2nd rack travel in: 4.00

3rd rack travel in: 4.00

Speed rpm : 1440...1445

rpm : 1473...1486

rpm : 1510...1540 Speed 4th rack travel in: 1570 rpm : 0.30...1.40 Speed 5th rack travel in: 1445...1455 rpm : 8.70 Speed LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring Speed rpm : 350' Rack travel in mm: 6.80 Testing: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 rpm : 450...510 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.70...9.80 2nd speed rpm : 600 Rack travel in m: 9.90...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 600 rpm Del.quantity cm3/: 51.0...53.0 1000 s: (49.0...55.0) Speed rpm : 850 Del.quantity cm3/: 56.0...58.0 1000 s: (53.5...60.5) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm: 15.00...15.40 LOW IDLE rpm : 350 Speed Rack travel in mm : 6.60...7.20 Del.quantity cm3/: 10.0...12.0 1000 s: (8.0...14.0) Spread cm3 : 2.50

1000 s: (4.50)

Note remarks

Test sheet : CAS 8,3 n Edition : 31.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 222

Injection pump

Pump designation : PES6A85D420LS2460

Governor

: RSV375...1100A2B517D Governor design.

Customer-spec. information Customer : CASE

: A 504 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12,10

Del.quantity cm3/: 8,4...8,5

100 s: (8,3...8,7)

Spread cm3 : 0,3

100 s: (-)

2nd speed rpm : 375 Rack travel in mm : 7,50

Del.quantity cm3/: 1,7...2,4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 83,5...85,0 Del.quantity

1000 : (82,5...87,0)

cm3 : 3.0Spread 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 11,10

Speed rpm : 1140...1160

2nd rack travel in: 2,80

Speed rpm : 1235...1265

4th rack travel in: 1320

Speed rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 7,50

Testing: rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375 Rack travel in mm: 7,30...7,70 Rack travel in mm : 4.65 rpm : 430...470 Speed rpm : 650 Speed Maximum rack trave: <0,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12,10 2nd speed rpm : 950 Rack travel in m: 12,50...12,60 3rd speed rpm : 800 Rack travel in m: 12,90...13,10 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 850 Del.quantity cm3/: 89,5...94,0 1000 s: (88,5...95,0) Speed rpm : 750 Del.quantity cm3/: <93,0 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11,10 rpm : 1140...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 125,0...135,0 1000 s: (-) HIGH IDLE 1st version rpm : 1200 Speed Del.quantity cm3/: 14,0...21,0 1000 s: (-)

Remarks:

LOW IDLE 

Note remarks

: CAS 8,3 n 4 Test sheet Edition : 28.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 223

Injection pump

Pump designation : PES6A85D420LS2460 EP type number : 0 410 886 912

Governor

: RSV375...1050A2B521D Governor design.

: 0 420 235 150 Governer no.

Customer-spec. information Customer : CASE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.35...11.45

Del.quantity cm3/ : 7,6...7.7

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

2nd speed rpm : 375 Rack travel in mm : 7,50 Del.quantity cm3/ : 1,4...2,0

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1050

Del.quantity

76.0...77.0 1000 : (-) cm3 : 3.0 1000 : (-) Spread

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.40

Speed rpm : 1090...1105 2nd rack travel in: 3.20

Speed rpm : 1165...1195

4th rack travel in: 1280

rpm : 0,20...1,20

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 375 Speed Rack travel in mm: 7,00 Testing:

Speed rpm : 150 Minimum rack trave: 19,00

Speed rpm: 375
Rack travel in mm: 7,40...7,60
Rack travel in mm: 2.35

: 470...490 Speed rom

Speed rpm : 650 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 11,40 rpm : 800 2nd speed

Rack travel in m: 12,30...12,45

3rd speed rpm : 500

Rack travel in m: 12,45...12,75

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 82,0...85,0 1000 s: (-)

Spread cm3 : 4.0

1000 s: (-) : 550 Speed rpm

Del.quantity cm3/: <84.0

1000 s: (-) cm3 : 4.0Spread

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10,40

rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 124,0...130,0

1000 s: (-)

Rack travel in mm : 17.40...17.70

HIGH IDLE

1st version

Speed rpm : 1150

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 11,0...17,0

1000 s: (-)

cm3 : 3.0Spread 1000 s: (-)

LOW IDLE

Speed rpm: 375
Rack travel in mm: 7.40...7.60 Del.quantity cm3/ : 14,0...20,0

1000 s: (-)

cm3 : 2.0 Spread 1000 s: (-)

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

: CAS 8,3 n 2 Test sheet Edition : 28.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 226

Injection pump

Pump designation : PES6A85D42OLS2460 : 0 410 886 912 EP type number

Governor

: RSV375...1100A2B636D Governor design.

: 0 420 235 161 Governer no.

Customer-spec. information Customer : CASE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. DC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Tolerance + - 0 : 0-60-120-180-240-300

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12,75...12,85

Del.quantity cm3/: 9,2...9,3

100 s: (-)

cm3 : 0,3 Spread

100 s: (-)

rpm : 375 2nd speed Rack travel in mm: 7,90

Del.quantity cm3/: 1,8...2,4

100 s: (-) cm3 : 0.2

Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 1000 Speed

Rack travel in mm : 0,20...1,20

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 92.0...93.0

1000 : (-) cm3 : 3,0

1000 : (-)

RATED SPEED

Spread

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11,80

Speed rpm : 1140...1155

2nd rack travel in: 3,00 Speed rpm: 1205...1235

4th rack travel in: 1300

rpm : 0,30...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm Rack travel in mm: 7.40 Testing: Speed : 150 rpm Minimum rack trave: 19.00 Speed rpm: 375 Rack travel in mm : 7,80...8,00 Rack travel in mm: 4.00 : 470...490 Speed rpm Speed : 620 rpm Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12,80 2nd speed rpm : 900 Rack travel in m: 13,50...13,60 3rd speed rpm : 500 Rack travel in m: 13,75...14,05 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 750 rpm Del.quantity cm3/: 103.0...106.0 1000 s: (-) Spread cm3 : 4.01000 s: (-) Speed Lbm : 650 Del.quantity cm3/: <106.0 1000 s: (-) Spread cm3 : 4.0 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11,80 Speed : 1140...1155 rpm STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 128,0...134,0 1000 s: (-) Rack travel in mm: 17.40....17.60 HIGH IDLE 1st version

Speed

L03

rpm

Del.quantity cm3/: 14,0...20,0 1000 s: (-)

: 1200

cm3 : 3.0Spread 1000 s: (-)

LOW IDLE

Speed rpm: 375
Del.quantity cm3/: 18,0...24,0
1000 s: (-)
Spread cm3: 2.0

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

### Note remarks

: CAS 8,3 n 3 Test sheet : 28.08.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 227

Injection pump

Pump designation : PES6A85D420LS2460 EP type number : 0 410 886 912

Governor

Governor design. : RSV375...1050A2B667D

Customer-spec. information Customer : CASE

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar : 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

# BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2.10...2.30)
Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0,50 (0,75)

#### L04

### BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 7,1...7,2

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed Rack travel in mm: 6.70

Del.quantity cm3/: 1.1...1.7 100 s: (-)

cm3 : 0.2 Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 1000 Speed

Rack travel in mm : 0,20...1,20

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

1 ـ 72 ـ . . . 1 : Del.quantity

1000 : (-) cm3 : 3,0

1000 : (-)

# RATED SPEED

Spread

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.00

rpm : 1090...1105 Speed

2nd rack travel in: 2.25

Speed rpm : 1185...1215

4th rack travel in: 1260

rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 6.20

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 rpm : 375 Speed

Rack travel in mm : 6,60...6,80

Rack travel in mm : 2.60

Speed rpm : 470...490

rpm : 600 Speed Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 11,00 2nd speed rpm : 800

Rack travel in m: 11,70...11,90 3rd speed rpm : 500

Rack travel in m: 12,05...12,35

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 82,1...85,1 1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

Speed rpm : 550 Del.quantity cm3/ : <84,6 1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10,00

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 126,0...132,0 1000 s: (-)

HIGH IDLE

1st version

rpm : 1150 Speed

Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 7.5...13,3

1000 s: (-) cm3 : 3.0 Spread

1000 s: (-)

L05

LOW IDLE

Speed rpm : 375

Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 11,0...17,0

1000 s: (-) cm3 : 2.0

1000 s: (-)

Remarks:

Spread

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

**APPLICATION** 

Tractor (tractor engines)

#### Note remarks

Test sheet : CAS 8,3 n 1 Edition : 04.08.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 228

Injection pump

Pump designation : PES6A85D420LS2460

Governor

Governor design. : RSV375...875A7B696R

Customer-spec. information Customer : CASE

: A-504 BD Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

: 0 681 343 009 assembly

Open inq

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 0,15...2,25

: (2.10...2.30) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0,50 (0,75)

L06

### BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,15...4,55

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 12,00 Del.quantity cm3/ : 7,25...8,05 100 s: (-)

rpm : 200 3rd speed

Rack travel in mm : 6,00 Del.quantity cm3/ : 0,95...1,75

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm: 0,30...C,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 875 Speed

Del.quantity : 98,5...101,5

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 7,20

rpm : 915...945 Speed

2nd rack travel in: 3,90

Speed rpm : 945...975

4th rack travel in: 1030

Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 26...34

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 8,00

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm: 375

Rack travel in mm : 7,70...8,30

Rack travel in mm: 3.35 Speed rpm: 440...460 Speed rpm: 550 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875 Rack travel in m: 9,00 2nd speed rpm : 350

Rack travel in m: 9,20...9,80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900 Del.quantity cm3/ : 70,5...93,5 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 880...895

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 126,0...132,0 1000 s: (-)

LOW IDLE

Speed rpm : 375
Del.quantity cm3/ : 15,5...23,5
 1000 s: (-)

Note remarks

Test sheet : CAS 8,3 m 2 : 24.08.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 229

Injection pump

Pump designation : PES6A90D420LS2461

Governor

: RSV375...1050A2B567D Governor design.

Customer-spec. information Customer : CASE

: A-504 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.0

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 9 681 230 706 Test lines

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25 : (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

0,50 (0,75) Tolerance + - 0

BASIC SETTING

L08

1st speed rpm: 1050

Rack travel in mm : 12,45...12,55

Del.quantity cm3/: 9,6...9,7

100 s: (-)

Spread cm3 : 0,3

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm: 7,40 2,2...6,1: Del.quantity cm3/: 1,6...2

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 96,0...97,0 Del.quantity

1000 (-) cm3 : 3,0 1000 : (-)

Spread

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11,50

rpm : 1090...1105 Speed

2nd rack travel in: 2,00

rpm : 1185...1215 Speed

4th rack travel in: 1280

rpm : 0,20...1,20 Speed

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 375

Rack travel in mm : 6,90

Testing:

rpm : 150

Minimum rack trave: 19,00

rpm : 375 Speed

Rack travel in mm : 7,30...7,50
Rack travel in mm : 2,50
Speed rpm : 470...490 rpm : 600 Speed Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12,50 : 900 2nd speed rpm Rack travel in m: 12,70...12,80 3rd speed rpm : 500 Rack travel in m: 12,80...13,10 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 99,0...102,0 1000 s: (-) Spread cm3 : 4.01000 s: (-) Speed : 650 rpm Del.quantity cm3/: <102.0 1000 s: (-) cm3 : 4,0 Spread 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11,50 rpm : 1090...1105 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 121,0...127,0 1000 s: (-) Rack travel in mm : 16,00...16,20 HIGH IDLE 1st version Speed : 1150 rpm Rack travel in mm: 5,40 Del.quantity cm3/: 12,0...18,0 1000 s: (-) cm3 : 3.0Spread 1000 s: (-) LOW IDLE Speed rpm : 375

L09

Note remarks

: CAS 8.3 m 1 : 31.07.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 230

Injection pump

Pump designation : PES6A90D420LS2461

Governor

Governor design. : RSV375...1050A2B710D

Customer-spec. information Customer : CASE

Engine : A 504 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: WS 187P

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

BASIC SETTING

Tolerance + - 0

Phasing

rpm : 1050 1st speed

Rack travel in mm : 12,00

Del.quantity cm3/: 9,0...9,2

100 s: (8,8...9,4)

: 0-60-120-180-240-300

: 0,50 (0,75)

Spread cm3 : 0,3

100 s: (-)

2nd speed rpm : 375
Rack travel in mm : 7,80
Del.quantity cm3/: 1,75...2,35

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

90.0..92.0 1000 : (88.0...94.0) cm3 : 3.0 1000 : (-) Del.quantity

Spread

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.00 Speed rpm: 1090...1105 2nd rack travel in: 2.90 Speed rpm: 1165...1195

4th rack travel in: 1250

Speed rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm: 375

Remarks:

Testing: rpm : 150 Speed Minimum rack trave: 19,00 Speed rpm : 375 Rack travel in mm : 7,60...8,00 Rack travel in mm: 4.40 rpm : 430...470 rpm : 600 Speed Speed Maximum rack trave: 1,20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12,00 2nd speed rpm : 800 Rack travel in m: 12,10...12,30 3rd speed rpm : 500 Rack travel in m: 12,10...12,30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 89,0...93,0 1000 s: (87,0...95,0) rpm : 650 Speed Del.quantity cm3/: <92,0 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11,00 rpm : 1090...1105 Speed STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 135,0...145,0 1000 s: (-)

HIGH IDLE

1st version rpm : 1150 Speed Del.quantity cm3/: 13,5...19,5 1000 s: (-)

LOW IDLE

Speed rpm : 375
Del.quantity cm3/: 17,5...23,5 1000 s: (-)

Note remarks

: DEE 6,6 f 5 Test sheet Edition : 31.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 237

Injection pump

Pump designation : PES6A95D41ORS2380

Governor

Governor design. : RSV600...1100A2B747L

Customer-spec. information

: JOHN DEERE Customer

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.0

Test nozzle holder

: 0 681 343 909 assembly

Opening

pressure\_bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00 : (1,85...2,05)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/ : 7,6...8,0

100 s: (-)

2nd speed rpm : 200 Rack travel in mm: 6,00 Del.quantity cm3/: 0,6...1,4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Decree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Speed Del.quantity 1000 : (-) : 78,5...82,5

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 8,0

Speed rpm : 1140...1150

2nd rack travel in: 2,80

Speed rpm : 1265...1295

4th rack travel in: 1400

rpm : 0,20...1,20 Speed

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 600

Rack travel in mm: 5,60

Testing:

Speed rpm : 200

Minimum rack trave: 19,00 Speed rpm: 400

Rack travel in mm: 5,50...5,70 Speed rpm: 700 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 500 Rack travel in m: 9,00 2nd speed rpm : 400

Rack travel in m: 9,90...10,50

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 159,0...179,0 1000 s: (-)

### HIGH IDLE

1st version

Speed rpm : 1170

Del.quantity cm3/: 18,5...24,5 1000 s: (-)

### LOW IDLE

Speed rpm : 600

Del.quantity cm3/: 12.0...16.0 1000 s: (-)

#### Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Note remarks

Test sheet : DEE 6,6 h Edition : 25.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 246

Injection pump

Pump designation : PES6A95D410RS2500

EP type number : 0 410 896 951

Governor

Governor design. : RSV600...1100A2B771L

Governer no. : 0 420 232 208

Customer-spec. information

Customer : JOHN DEERE

Engine : 6404 TH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 1,85...1,95

: (1,80...2,00)

Rack travel in mm: 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9,75...9,85

Del.quantity cm3/: 8,8...9,0

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

2nd speed rpm : 600 Rack travel in mm : 5,10 Del.quantity cm3/ : 1,2...1,6

100 s: (-)

cm3 : 0,3 Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...1,00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 88,0...90,0

1000 : (-) cm3 : 3,0 1000 : (-)

Spread

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 8,80 Speed rpm : 1145...1155

2nd rack travel in: 6,00

rpm : 1185...1215 Speed

LOW IDLE 1

Control lever

position degrees: 21...29

Setting point w/out bumper spring

rpm : 600

Rack travel in mm: 4,60

Testing:

Speed rpm : 100 Minimum rack trave: 19,00 Speed rpm: 600

Rack travel in mm: 5,00...5,20
Rack travel in mm: 2,00
Speed rpm: 670...730

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 8,80

Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160,0...180,0 1000 s: (-)

Rack travel in mm: 19,00...21,00

#### HIGH IDLE

1st version

rpm : 1200 Speed Rack travel in mm: 6,00

Del.quantity cm3/: 20,0...30,0 1000 s: (-)

cm3 : 4,0 1000 s: (-) Spread

#### LOW IDLE

Speed rpm : 600 Rack travel in mm : 5,10 Del.quantity cm3/ : 12,0...16,0 1000 s: (-)

#### Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : DEE 6,6 h 1 Edition : 25.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 40 876 247

Injection pump

Pump designation : PES6A95D41ORS2500

EP type number : 0 410 896 946

Governor

Governor design. : RSV400...1100A7B772L

Governer no. : 0 420 232 209

Customer-spec. information

Customer : JOHN DEERE

: 6404 T Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressine, bar : 172...175

Test lines : 9 681 230 706

Outside diameter

x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm

: 1,85...1,95 : (1,80...2,00)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 1080 1st speed

Rack travel in mm : 10,00

Del.quantity cm3/: 8,9...9,1

100 s: (-) ------

Spread cm3 : 0.3

100 s: (-)

rpm : 400 2nd speed Rack travel in mm: 6,00

Del.quantity cm3/: 1,2...1,6

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...1,00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

: 89,0...91,0 Del.quantity

1000 : (-) cm3 : 3.0

Spread

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 66...74

Testing:

1st rack travel in: 9.6 Speed rpm : 1130...1160

2nd rack travel in: 9,0

rpm : 1115...1125 Speed

LOW IDLE 1 Control lever

position degrees: 25...33

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 5,50

Testing:

Speed : 100 rpm Minimum rack trave: 19,00 rpm : 400 Speed

Rack travel in mm: 5,90...6,10 Rack travel in mm: 2,00

rpm : 520...580 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 400 Rack travel in m: 10,00 rpm : 300 2nd speed

Rack travel in m: 11,20...11,80

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9,00

rpm : 1115...1125 Speed

# STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 160,0...190,0 1000 s: (-)

Rack travel in mm : 19,00...21,00

# HIGH IDLE

1st version

rpm : 1145 Speed

Rack travel in mm : 4,60 Del.quantity cm3/ : 25,0...33,0 1000 s: (-)

cm3 : 4.0Spread

1000 s: (-)

# LOW IDLE

rpm : 400 Speed Rack travel in mm: 6,00

Del.quantity cm3/: 12,0...16,0

1000 s: (-)

cm3 : 3.0Spread

1000 s: (-)

# Remarks:

Start-of-delivery mark at 140 angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : DEE 6,6 h 2 Edition : 25.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 249

Injection pump

Pump designation : PES6A95D41ORS2500 EP type number : 0 410 886 246

Governor

Governor design. : RSV600...1100A2B774L

Governer no. : 0 420 232 210

Customer-spec. information

Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 1,85...1,95

: (1,80...2,00)

Rack travel in mm: 9,00...12,00 -

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9,35...9,45

Del.quantity cm3/: 8,0...8,2

100 s: (-)

Spread cm3 : 0,3

100 s: (-)

2nd speed rpm : 600 Rack travel in mm: 5.30

Del.quantity cm3/: 1,2...1,6

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0,30...1,00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 80,0...82,0 1000 : (-) Del.quantity

cm3 : 3,0

1000 : (-)

RATED SPEED

Spread

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 8,40

Speed rpm : 1150...1160

2nd rack travel in: 5,0

Speed rpm : 1185...1215

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 600 Rack travel in mm: 4,80

Testing:

Speed rpm : 100 Minimum rack trave: 19,00 Speed rpm: 600

Rack travel in mm: 5,20...5,40 Rack travel in mm: 2,00

Speed rpm : 670...730

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,40

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 156,0...176,0

1000 s: (-)

Rack travel in mm : 19,00...21,00

### HIGH IDLE

1st version

rpm : 1200 Speed Rack travel in mm: 5,00
Del.quantity cm3/: 21,0...31,0
1000 s: (-)
Spread cm3: 4,0
1000 s: (-)

## LOW IDLE

Speed rpm : 600 Rack travel in mm: 5,30

Del.quantity cm3/ : 12,0...16,0

1000 s: (-)

cm3 : 3.0 1000 s: (-) Spread

## Remarks:

Start-of-delivery mark at 140 angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : DEE 7,7 i : 25.08.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 269

Injection pump

Pump designation : PES6A95D410RS2536

EP type number : 0 410 896 939

Governor

Governor design. : RSV400...1100A2B2018

DL

: 0 420 234 378 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6466 T Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 1.85...1.95

: (1.80...2.00)

Rack travel in mm: 10.50

Firing order : 1-5-03-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0: 0.50 (.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 9.5...9.7

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 400 2nd speed

Rack travel in mm : 6.00...6.20

Del.quantity cm3/: 1.2...1.6

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 800

Del.quantity : 95.0...97.0

1000 : (-) cm3 : 3.0 1000 : (-)

Spread

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 9.20

rpm : 1145...1155 Speed

2nd rack travel in: 5.10

rpm : 1185...1215 Speed

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400°

Rack travel in mm: 5.50

L20

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 400

Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00

rpm : 480...540 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 10.30...10.40

rpm : 800 2nd speed

Rack travel in m: 10.90...11.00

3rd speed rpm : 650

Rack travel in m: 11.10...11.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed ? rpm : 500 hPa : 133.2 Pressure

Rack travel mm : 10.05...10.15

Measurement

Speed 1/min : 500

1st pressure hPa : 219.9

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 rpm : 650

Del.quantity cm3/: 106.5...109.5

1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/ : 75.0...81.0 1000 s: (-)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 162.0...182.0

1000 s: (-)

Rack travel in mm: 19.00...21.00

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 18.0...28.0

Del.quantity cm3/: (-) 1000 s: 5.00...5.20

Spread cm3 : 4.01000 s: (-)

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 6.00...6.10

Del.quantity cm3/: 12.0...16.0

1000 s: (-)

Spread cm3 : 3.0

1000 s: (-)

Remarks:

Start-of-delivery mark = 15.5° after

start of delivery cyl. 1.

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : DAF 6.2 o 1 Edition : 28.06.88 : 12.10.86 : ISO-4113 Replaces Test oil

Combination no. : 0 400 876 333

Injection pump

Pump designation : PES6A95D32ORS2693Z

EP type number : 0 410 896 913

Governor

Governor design. : RSV300...1300A0C2195

: 0 420 233 200 Governer no.

Customer-spec. information Customer

Engine : DNS 620

1st version kW : 150.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nezzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference CS: 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.35

100 s: (0.60)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 700

Del.quantity : 87.0...89.0

1000 : (85.0...91.0) cm3 : 3.5

Spread 1000 : (6.0)

RATED SPEED

1st version Control lever

position degrees: 54-62

Testing:

1st rack travel in: 10.70

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1410...1440

L22

3rd rack travel in: 4.00

rpm : 1430...1460 Speed

4th rack travel in: 1595

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 300° Rack travel in mm: 5.90

Testing:

Speed ` rpm : 100 Minimum rack trave: 19.50 Speed rpm : 300

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00 rpm : 570...630

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1290

Rack travel in m: 11.70...11.90

2nd speed rpm : 500

Rack travel in m: 12.20...12.30

3rd speed rpm : 1020

Rack travel in m: 11.90...12.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 Pressure hPa : 700

Rack travel mm : 12.20...12.30

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.40

2nd pressure hoa : 290
Rack travel in m: 12.00...12.10
3rd pressure hoa : 250

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm: 1290 Del.quantity cm3/: 86.0...88.0 1000 s: (83.5...90.5)

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 65.0...67.0 1000 s: (63.0...69.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...145.0 1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.30...6.50

Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5)

cm3 : 3.5 Spread

1000 s: (5.5)

Remarks:

Note remarks

Test sheet : IHC 9,0 i Edition Replaces Edition : 18.8.89

: ISO-4113

Combination no. : 0 400 878 006

Injection pump

Pump designation : PES8A75D32ORS2357

Governor

Governor design.: RSV300...1200AOB1040

Customer-spec. information Customer : IHC

: DV 550-B Engine

1st version kW : 117.7 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 3.95...4.05 Prestroke mm : (3.90...4.10)

Rack travel in mm: 10..00

Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

L24

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.00

Del.quantity cm3/ : 5.7...6.0

100 s: (-)

Spread cm3 : -

100 s: (-)

rpm : 1400 2nd speed

Rack travel in mm : 8.70...8.90

Del.quantity cm3/ : 3.4 \*

100 s: (-)

3rd speed rpm : 300

Rack travel in mm : 8.70...8.90

Del.quantity cm3/: 3.4 \*

100 s: (-)

1st speed rpm : 1200

Del.quantity cm3/ : 5.7...6.0 \*\*

100 s: (-)

Spread cm3 : -

100 s: (-)

2nd speed rpm : 1400 Rack travel in mm : 8.70...8.90

Del.quantity cm3/: 0.1...1.4 \*\*

100 s: (-)
3rd speed rpm : 300
Rack travel in mm : 8.70...8.90

Del.quantity cm3/: 0.1...1.4 \*\*

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 56.0...58.0

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 7.80

Speed rpm : 1230...1250

2nd rack travel in: 4.80

Speed rpm : 1425...1455

LOW IDLE 1

Control lever

position degrees: 26...34

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.7

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.40...6.00

Rack travel in mm : 3.30

rpm : 440...460 rpm : 660 Speed

Speed

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 8.80

2nd speed rpm : 400

Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900 Del.quantity cm3/ : 56.5...59.5

1000 s: (-)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 7.80

rpm : 1225...1235 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 111.0...134.0 \*

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 900
Del.quantity cm3/ : 56.5...59.5
 1000 s: (-)

LOW IDLE

Remarks:

 $\star$  = Cylinders 1,7,6 and 4

\*\* = Cylinders 2.8.3 and 5

Note remarks

Test sheet : CAS 1 b Edition : 28.8.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 274 004

Injection pump

Pump designation : PES4A95C420LS3013 EP type number : 0 411 294 997

Governor

Governor design. : RSV375...1100A2B538D

: 0 420 235 142 Governer no.

Customer-spec. information Customer

Engine : A - 62326

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm: 10.50

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

L26

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.3...12.5

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm : 3.50...3.70 Del.quantity cm3/: 1.4...2.0

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 123.0...125.0

1000 : (-)

Spread cm3 : 3.0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1155

2nd rack travel in: 3.60

rpm : 1185...1215

LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 375

Rack travel in mm : 5.4

Testing:

Speed rpm : 150 Minimum rack trave: 19.00 Speed rpm: 375
Rack travel in mm: 5.80...6.00
Rack travel in mm: 2.90

rpm : 430...470 rpm : 550 Speed

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30

2nd speed rpm : 750

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed грт : 750

Del.quantity cm3/: 125.0...128.0

1000 s: (-)

Spread cm3 : 4.01000 s: (-)

Speed rpm : 650 Del.quantity cm3/: <63.7

1000 s: (-)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 139.0...145.0

1000 s: (-)

Rack travel in mm : 14.60...14.80

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 3.50...3.70 Del.quantity cm3/: 14.7...20.7 1000 s: (-)

cm3 : 4.0 Spread

1000 s: (-)

LOW IDLE

Speed rpm

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 15.8...21.8 1000 s: (-) Spread cm3 : 3.0

1000 s: (-)

Remarks:

Test specifications approved by Scania

on 1987-12-15

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

: CAS 5,5 a 3 Test sheet Edition : 29.8.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 274 007

Injection pump

Pump designation : PES4A95D420LS3023 EP type number : 0 411 294 997

Governor

: RSV375...1100A2B538D Governor design.

Governer no. : 0 420 235 142

Customer-spec. information Customer : CASE

: A 336 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Inlet press., bar : 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 10.50

Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0.50 (0.75)

L28

Time to cyl. no. : 1

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 11.15...11.25

Del.quantity cm3/: 12.3...12.5

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 1.5...2.1 100 s: (-)

cm3 : 0.3Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 1000 Speed

Rack travel in mm : 0.20...1.20

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 123.0...125.0 Del.quantity

1000 : (-) cm3 : 3.0

Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1155

2nd rack travel in: 2.05

rpm : 1205...1235 Speed

LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 375°

Rack travel in mm: 5.4

Testing:

rpm : 150 Speed Minimum rack trave: 19.00 rpm : 375 Speed

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.90

rpm : 440...460 rpm : 550 Speed

Speed Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30

2nd speed rpm : 680

Rack travel in m: 11.45...11.75

3rd speed rpm : 400

Rack travel in m: 11.45...11.75

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 125.0...128.0 1000 s: (-)

Spread cm3 : 4.0 1000 s: (-)

Speed rpm : 650 Del.quantity cm3/ : <127.4 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 139.0...145.0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200
Rack travel in mm : 3.20...3.40
Del.quantity cm3/ : 14.7...20.7
1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

LOW IDLE

MO1

Speed rpm : 375

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 15.8...21.8 1000 s: (-) Spread cm3 : 3.0

1000 s: (-)

Remarks:

Test specifications approved by Scania

on 1987-12-15

Start-of-delivery mark is at start of delivery of cylinder 1

Note remarks

Test sheet : CAS 5,5 a 4 Edition : 29.8.89

Replaces

: ISO-4113

Test oil

Combination no. : 0 401 274 008

Injection pump

Pump designation : PES4A95D42OLS3023 EP type number : 0 411 294 997

Governor

Governor design. : RSV375...1100A2B651D

Governer no.

: 0 420 235 165

Customer-spec. information Customer : CASE

Engine

: A 336 BDT (T/C)

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm: 10.50 Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - 0 : 0.50 (0.75) Phasing

M<sub>02</sub>

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.25...11.35

Del.quantity cm3/: 12.2...12.4

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 1.7...2.1

100 s: (-) cm3 : 0.3 Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 1000 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 122.5...124.5 Del.quantity

1000 : (-)

: 3.0 cm3 Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 10.30

Speed rpm : 1140...1155

2nd rack travel in: 2.10

Speed rpm : 1185...1215

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 5.4

Testing:

Speed rpm : 150 Minimum rack trave: 19.00 Speed rpm : 375

Rack travel in mm : 5.80...6.00

Rack travel in mm: 2.40 rpm : 440...460

Speed rpm : 550 Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.30...11.40

2nd speed rpm : 800

Rack travel in m: 11.50...11.60

3rd speed rpm : 460

Rack travel in m: 11.50...11.75

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 123.0...127.0 1000 s: (-)

Spread cm3 : 4.0

1000 s: (-) : 650 rpm

Speed Del.quantity cm3/: <126.0 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 132.0...138.0

1000 s: (-)

Rack travel in mm: 14.70...14.80

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 3.40...3.60

Del.quantity cm3/: 13.0...19.0

1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

LOW IDLE

rpm : 375 Speed

Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 17.0...21.0 1000 s: (-) Spread cm3: 3.0

1000 s: (-)

Remarks:

Test specifications approved by Scania

on 1987-12-15

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet : CAS 8,3 o Edition : 07.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 007

Injection pump

Pump designation : PES6A95C420LS3007

Governor

Governor design. : RSV375...1100A2B569D

Customer-spec. information Customer : CASE

Engine : A-504 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: WS 187P (CASE)

Inlet press., bar: 1.25

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10 : (1,95...2,15)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 8,4...9,0

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 15,00 Del.quantity cm3/: 16,5...17,8

100 s: (-)
3rd speed rpm : 200
Rack travel in mm : 6,00 Del.quantity cm3/: 1,4...2,6

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 136,0...138,0 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 11,20

Speed rpm : 1125...1155

2nd rack travel in: 2,90 Speed rpm: 1185...1215

4th rack travel in: 1250

Speed rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 5,90

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm: 375
Rack travel in mm: 5,60...6,20
Rack travel in mm: 2.70

rpm : 440...460 rpm : 540 Speed Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 400

Rack travel in m: 9,60...9,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 145,5...149,5

1000 s: (-)

rpm : 650 Speed Del.quantity cm3/: <148,5 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 134,0...144,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200 Del.quantity cm3/: 20,5...28,5 1000 s: (-)

LOW IDLE

rpm : 375 Speed

Del.quantity cm3/: 17,0...23,0

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : CAS 8,3 q 1 Edition : 24.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 011

Injection pump

Pump designation : PES6A95D42OLS3007

Governor

: RSV375...1100A2B569D Governor design.

Customer-spec. information Customer : CASE

Engine : A-504 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 443 022

Opening

: 172...175 pressure, bar

: 9 681 230 706 Test lines

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10 : (1,95...2,15)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

M<sub>0</sub>6

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 8,4...9,0

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed Rack travel in mm : 15,00

Del.quantity cm3/: 16,5...17,8 100 s: (-) 3rd speed rpm : 200 Rack travel in mm : 6,00 Del.quantity cm3/: 1,4...2,6

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

. 136,0...138 Del.quantity

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.80 Speed rpm: 1130...1150 2nd rack travel in: 2.90

Speed rpm : 1190...1210

4th rack travel in: 1250

rpm : 0,30...1,00

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

' rpm : 375'

Rack travel in mm: 5,90

Testing:

Speed rpm : 150 Minimum rack trave: 19,00 Speed rpm: 375
Rack travel in mm: 5,60...6,20
Speed rpm: 540 Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9,00 2nd speed rpm : 400 Rack travel in m: 9,60...9,90 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 145,5...149,5 1000 s: (-) Speed rpm : 650 Del.quantity cm3/ : <149,0 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than

full load rack tr: 8,00

Speed rpm : 1140...1155

#### STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 134,0...144,0 1000 s: (-)

## HIGH IDLE

1st version

Speed rpm : 1200 Del.quantity cm3/ : 21,5...28,5 1000 s: (-)

### LOW IDLE

rpm : 375 Speed

Del.quantity cm3/: 17,0...23,0

1000 s: (-)

Remarks:

Note remarks

Test sheet : DEE 6,6 b 1 Edition : 01.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 018

Injection pump

Pump designation : PES6A100D410RS3020

Governor

Governor design: : RSV400...1100A2B676D

Customer-spec. information : JOHN DEERE Customer

: 6404 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 9 681 230 706 Test lines

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump settino values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 2,00...2,10 Prestroke mm : (1,95...2,15) Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 7,9...8,7

100 s: (-)

rpm : 200 2nd speed Rack travel in mm: 9,00 Del.quantity cm3/: 4,2...5,4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 700

Del.quantity : 105,0...107,0 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.30

rpm : 1090...1110 Speed

2nd rack travel in: 4.30

Speed rpm : 1185...1215

4th rack travel in: 1260

rpm : 0.30...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400 Speed

Rack travel in mm: 6,30

Testing:

Speed rpm : 200 Minimum rack trave: 19,00 Speed rpm : 400

Rack travel in mm: 6,00...6,60 Rack travel in mm: 1,80

Speed rpm : 480...520 Speed rpm : 560 Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 9,00

2nd speed rpm : 500 Rack travel in m: 9,80...10,10

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 550 Speed hPa : 550 Pressure

Rack travel mm : 0.10...0.20

Measurement

1/min : 550 Speed

1st pressure hPa : 80

Rack travel in m: 2.60...2.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750 Speed

Del.quantity cm3/: 117,0...120,0

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 550
Del.quantity cm3/ : 69,0...75,0

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 160,0...180,0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200 Del.quantity cm3/ : 20,0...30,0

1000 s: (-)

MO9

LOW IDLE

rpm : 400 Speed

Del.quantity cm3/: 11,5...15,5

1000 s: (-)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of

delivery of cylinder 1

Note remarks

Test sheet : CAS 8,3 a11 Edition : 29.8.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 027

Injection pump

Pump designation : PES6A95D420LS3024 EP type number : 0 411 296 996

Governor

Governor design. : RSV375...1100A2B516D

Governer no. : 0 420 235 144

Customer-spec. information Customer : CASE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 271 020

Outside diameter x Wall thickness

x Length mm : 6.35x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - D : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.75...10.85

Del.quantity cm3/: 11.2...11.4

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

2nd speed rpm : 375

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 1.6...2.2

100 s: (-) cm3 : 0.3 Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 1000 Speed

Rack travel in mm : 0.20...1.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del. quantity : 112.0...114.0

1000 : (-) cm3 : 3.0

Spread 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 9.80

Speed rpm : 1140...1150

2nd rack travel in: 2.20

rpm : 1205...1235 Speed

4th rack travel in: 1280

Speed rpm : 0.30...1.00

LOW IDLE 1

Control lever

position degrees: 14...22 Setting point w/out bumper spring

rpm : 375 Speed

M10

Rack travel in mm: 5.20 Testing: Speed : 150 rpm Minimum rack trave: 19.00 rpm : 375 Speed Rack travel in mm: 5.60...5.80 Rack travel in mm: 2.45 Speed rpm : 440...460 Speed : 550 rpm Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.80...10.90 rpm : 800 2nd speed Rack travel in m: 10.95...11.25 3rd speed rpm : 600 Rack travel in m: 10.95...11.25 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 114.0...117.0 1000 s: (-) Spread cm3 : 4.01000 s: (-) rpm : 700 Speed rpm Spread cm3 : 4.01000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 Speed rpm : 1140...1155 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 132.0...138.0 1000 s: (-) Rack travel in mm : 14.60...14.80 HIGH IDLE 1st version

: 1200

rpm Rack travel in mm : 3.50...3.70 Del.quantity cm3/: 12.0...18.0 1000 s: (-)

Speed

M11

Spread cm3 : 4.01000 s: (-) LOW IDLE Speed rpm : 375
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.0...22.0 1000 s: (-) cm3 : 3.0 Spread 1000 s: (-) Remarks: Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CAS 8,3 a12 : 29.8.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 029

Injection pump

Pump designation : PES6A95D42OLS3024 : 0 411 296 996

EP type number

Governor

Governor design. : RSV375...1100A2B599D

: 0 420 235 152 Governer no.

Customer-spec. information Customer

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 9 681 271 020

Outside diameter x Wall thickness

: 6.35x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 10.75...10.85

Del.quantity cm3/: 11.2...11.4

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 1.6...2.2

100 s: (-)

cm3 : 0.3Spread 100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 1000 Speed

Rack travel in mm : 0.20...1.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 112.0...114.0

1000 : (-)

cm3 : 3.0Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 9.80

rpm : 1140...1155 Speed

2nd rack travel in: 2.20

rpm : 1205...1235 Speed

4th rack travel in: 1300

rpm : 0.30...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm: 5.20 Testing: Speed rpm : 150 Minimum rack trave: 19.00 Speed rpm : 375 Rack travel in mm : 5.60...5.80 Rack travel in mm: 3.00 rpm : 440...460 Speed : 600 Speed rpm Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.80...10.90 2nd speed rpm : 950 Rack travel in m: 11.00...11.20 3rd speed rpm : 600 Rack travel in m: 11.00...11.20 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 114.0...117.0 1000 s: (-) Spread cm3 : 4.01000 s: (-) Speed rpm : 700 Del.quantity cm3/: <117.0 1000 s: (-) cm3 : 4.0 Spread 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1140...1155 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 132.0...138.0 1000 s: (-) Rack travel in mm: 14.60...14.80 HIGH IDLE 1st version

rpm : 1200

Rack travel in mm : 3.50...3.70 Del.quantity cm3/ : 12.0...18.0 1000 s: (-)

Speed

M13

Spread cm3 : 4.0 1000 s: (-)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.0...22.0

1000 s: (-) Spread cm3 : 3.0 1000 s: (-)

Remarks:
Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

#### Note remarks

: CAS 8,3 a13 Test sheet Edition : 29.8.89 Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 034

Injection pump

Pump designation : PES6A95D420LS3024 EP type number : 0 411 296 996

Governor

Governor design. : RSV375...1100A2B697D

Customer-spec. information Customer : CASE

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 9 681 271 020

Outside diameter x Wall thickness

: 6.35x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

### BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

M14

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.25...11.35

Del.quantity cm3/: 12.4...12.6

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

2nd speed rpm : 375 Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 1.6...2.2

100 s: (-) cm3 : 0.3Spread

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 1000

Reck travel in mm : 0.20...1.20

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 112.0...114.0 1000 : (-) cm3 : 3.0 1000 : (-) Del.quantity

Spread

### RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.30

rpm : 1140...1155 Speed

2nd rack travel in: 3.65 Speed rpm: 1185...1215

4th rack travel in: 1280

rpm : 0.20...1.20 Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 5.20

Testing:

Speed rpm : 150 Minimum rack trave: 19.00 rpm : 375 Speed

Rack travel in mm : 5.60...5.80

Rack travel in mm : 2.30 Speed rpm : 440...460 Speed rpm : 600

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.30...11.40 2nd speed rpm : 750

Rack travel in m: 11.40...11.60

3rd speed rpm : 500

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rom

Del.quantity cm3/: 124.0...127.0 1000 s: (-) Spread cm3 : 4.0

1000 s: (-)

Speed rpm : 650 Del.quantity cm3/: <126.0 1000 s: (-)

cm3 : 4.0 Spread

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1140...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 132.0...138.0 1000 s: (-) Rack travel in mm: 14.00...14.70

HIGH IDLE

1st version

Speed rpm : 1200

Rack travel in mm : 3.90...4.10

Del.quantity cm3/: 22.0...28.0

1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

LOW IDLE

rpm : 375 Speed

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.2...22.2

1000 s: (-) cm3 : 3.0

Spread

1000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

: DEE 6,6 g 1 Test sheet Edition : 29.8.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 037

Injection pump

Pump designation : PES6A100D410RS3025

EP type number : 0 411 206 009

Governor

Governor design. : RSV400...1100A2B765D

: 0 420 234 344 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6404 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm

: 2.00...2.10

: (1.95...2.15)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

M16

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 10.4...10.6

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 400 2nd speed Rack travel in mm : 6.20...6.40

Del.quantity cm3/: 1.2...1.6

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm : 1000

Rack travel in mm : 0.20...1.20

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 800 : 104.0...106.0 Del.quantity

1000 : (-) cm3 : 3.0

Spread

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9.00

rpm : 1145...1155 Speed

2nd rack travel in: 2.40

rpm : 1255...1285 Speed

4th rack travel in: 1350

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring Speed ` rpm : 400° Rack travel in mm: 5.80 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 6.20...6.40 Rack travel in mm: 3.00 rpm : 470...490 Speed rpm : 600 Speed Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100
Rack travel in m: 10.00...10.10
2nd speed rpm : 750 Rack travel in m: 10.50...10.60 3rd speed rpm : 500 Rack travel in m: 10.50...10.60 Aneroid/Altitude Compensator Test 1st version Setting rpm : 550 Speed

hPa : 86.6 Pressure Rack travel mm

Measurement

1/min : 550 Speed

1st pressure hPa : 486.5 Rack travel in m: \*\*

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 800 rpm : 750 Del.quantity cm3/: 113.0...116.0 1000 s: (-) cm3 : 4.0Spread 1000 s: (-) Aneroid pressure h: -Speed rpm : 550
Del.quantity cm3/ : 61.7...67.7 1000 s: (-)

cm3 : 4.0

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 9.00 Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 155.0...175.0 1000 s: (-)

Rack travel in mm: 21.00

HIGH IDLE

1st version rpm : 1200 Speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 26.5...36.5

1000 s: (-) cm3 : 4.0Spread 1000 s: (-)

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 12.0...16.0

1000 s: (-) cm3 : 3.0 Spread 1000 s: (-)

Remarks:

\* Start of LDA (manifold-pressure compensator) movement

\*\* Ende der LDA-Bewegung Start-of-delivery mark at 140 angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : DEE 6,6 g 2 Edition : 25.8.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 039

Injection pump

Pump designation : PES6A100D410RS3025

EP type number : 0 411 206 009

Governor

: RSV400...1100A2B766D Governor design.

: 0 420 234 345 Governer no.

Customer-spec. information

Customer : JOHN DEERE

Engine : 6404 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 1.95...2.05 Prestroke mm

: (1.90...2.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

M18

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.15...10.25

Del.quantity cm3/: 10.9...11.1

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 400 2nd speed

Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 1.3...1.7

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 800

: 109.2...111.2 Del.quantity

1000 : (-) cm3 : 3.0 1000 : (-)

Spread

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9.20

Speed rpm : 1145...1155

2nd rack travel in: 4.80

rpm : 1185...1215 Speed

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 5.80

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00 Speed : 480...540 rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 11.20...11.30 2nd speed rpm : 500

Rack travel in m: 11.95...12.00

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed hPa : 113.2 Pressure : 9.55...9.65 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : 319.9

Rack travel in m: 10.80...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 Speed rpm : 500

Del.quantity cm3/: 122.3...125.3

1000 s: (-)

cm3 : 4.0 Spread

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/ : 70..3...76.3 1000 s: (-)

cm3 : 4.0Spread

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.20

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...185.0

1000 s: (-)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 25.3...35.3 1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

M19

#### Note remarks

: CAS 8,3 a10 Test sheet Edition : 17.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 041

Injection pump

Pump designation : PES6A100D420LS3024

EP type number : 0 411 206 008

Governor

Governor design. : RSV375...1050A2B785D

Governer no. : 0 420 235 189

Customer-spec. information Customer : CASE

: A 504 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2,00...2,10 Prestroke mm

: (1,95...2,15)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing Tolerance + - 0 : 0,50 (0,75)

M20

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12,15...12,25

Del.quantity cm3/: 14,3...14,5

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm : 6,10...6,30 Del.quantity cm3/ : 1,6...2,2

100 s: (1,4...2,4) cm3 : 0,3 Spread

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 143,5...145,5 Del.quantity

1000 : (141,0...148,0) cm3 : 3,0

Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11,20

Speed rpm : 1090...1100

2nd rack travel in: 3,10

Speed rpm : 1165...1195

4th rack travel in: 1250

rpm : 0.20...1.20

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 5,70 Testing: Speed : 150 rpm Minimum rack trave: 19.00 Speed rpm: 375 Rack travel in mm: 6,10...6,30
Rack travel in mm: 3,30
Speed rpm: 440...460 rpm : 550 Speed Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 12,20 2nd speed rpm : 700 Rack travel in m: 12,25...12,45 3rd speed rpm : 400 Rack travel in m: 12,25...12,45 FUEL DELIVERY CHARACTERISTICS 1st version Speed грт : 700 Del.quantity cm3/: 144,5...147,5 1000 s: (141,5...150,5) Spread cm3 : 4.0 1000 s: (-) Speed rpm : 600 Del.quantity cm3/: <147,0 1000 s: (<145,0) Spread cm3 : 4.01000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11,20 Speed rpm : 1090...1100 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135,0...141,0

1000 s: (-) Rack travel in mm: 14,30...14,60

rpm Rack travel in mm : 4,40...4,60

: 1165

Del.quantity cm3/: 25,0...31,0 1000 s: (22,5...33,5) cm3 : 4.0 Spread 1000 s: (-) LOW IDLE rpm : 375 Speed Rack travel in mm : 6.10...6.30 Del.quantity cm3/ : 15.6...21.6 1000 s: (13,6...23,6) cm3 : 3,0 Spread 1000 s: (-) Remarks: Start-of-delivery mark is at start of delivery of cylinder 1

HIGH IDLE

1st version

Note remarks

: DEE 6,6 9 : 27.07.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 042

Injection pump

Pump designation : PES6A100D410RS3025

Governor

Governor design. : RSV400...1050A2B786D

Customer-spec. information

: JOHN DEERE Customer

Engine : 6404

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10

: (1,95...2,15)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11,10

Del.quantity cm3/: 11,45...11,65

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

rpm : 400 2nd speed

Rack travel in mm : 6,60

Del.quantity cm3/ : 1,30...1,70

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm: 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1100

Del.quantity : 113,0...117,5

1000 : (111,0...119,5)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10,10

Speed rpm : 1095...1110

2nd rack travel in: 3,00

Speed rpm : 1195...1225

4th rack travel in: 1300

Speed rpm : 0,20...1,20

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 6,60

Testing:

Speed rpm : 100 Minimum rack trave: 19,00 Speed rpm : 400

Rack travel in mm : 6,50...6,70

rpm : 600 Speed Maximum rack trave: 0,10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 11,10 2nd speed rpm : 900

Rack travel in m: 11,20...11,40

3rd speed rpm : 750

Rack travel in m: 12,00...12,10

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 550 Speed Pressure hPa : 890

: 12.00...12.10 Rack travel mm

Measurement

Speed 1/min : 550

1st pressure hPa : 280 Rack travel in m: \*

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100 rpm : 750 Speed

Del.quantity cm3/: 121.0...126.0 1000 s: (119.0...128.0)

Aneroid pressure h:

Speed rpm: 550
Del.quantity cm3/: 49.0...55.0
1000 s: (47.0...57.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10,10

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

HIGH IDLE

1st version

Speed rpm : 1150

Del.quantity cm3/: 22,0...32,0 1000 s: (-)

LOW IDLE

Speed rpm : 400

Del.quantity cm3/: 13.0...17.0 1000 s: (-)

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of

delivery of cylinder 1

\* Start of LDA (manifold-pressure compensator) movement

Note remarks

: DEE 7,7 j Test sheet Edition : 24.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 044

Injection pump

Pump designation : PES6A100D410RS3027

EP type number : 0 411 206 013

Governor

: RSV400...1100A2B789D Governor design.

: 0 420 234 368 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6466 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Openino

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10 : (1,95...2,15)
Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - D : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10,85...10,95

Del.quantity cm3/: 10,7...10,9

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

rpm : 400 2nd speed Rack travel in mm : 6,30

Del.quantity cm3/: 1,5...1,9

100 s: (-)

Spread cm3 : 0,3

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 106,5...108,5 Del.quantity

1000 : (-) cm3 : 3,0 Spread

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9,90

Speed rpm : 1145...1155

2nd rack travel in: 6,20

Speed rpm : 1185...1215

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 5,80

Testing:

Speed rpm : 100 Minimum rack trave: 19,00 : 400 Speed rpm

Rack travel in mm : 6,20...6,40

Rack travel in mm : 2,00

: 450...510 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 10,90 2nd speed rpm : 525 Rack travel in m: 12,35

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 117

Rack travel mm : 10,55...10,65

Measurement

1/min: 500 Speed

1st pressure hPa : 315

Rack travel in m: 11,60...12,00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 525 rpm

Del.quantity cm3/: 116,1...119,1 1000 s: (-)

cm3 : 4.0Spread 1000 s: (-)

rpm : 550 Speed

Del.quantity cm3/: 82,6...85,6

1000 s: (-)

Spread cm3 : 4,01000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 148,0...178,0

1000 s: (-)

Rack travel in mm : 19,00...21,00

HIGH IDLE

1st version

rpm : 1200 Speed Rack travel in mm: 6,20

Del.quantity cm3/: 20,6...35,6 1000 s: (-)

cm3 : 4,0Spread 1000 s: (-)

LOW IDLE

rpm : 400 Speed

Rack travel in mm: 6,30

Del.quantity cm3/: 10,8...14,8 1000 s: (-)

Spread cm3 : 3.0

1000 s: (-)

Remarks:

Start-of-delivery mark at control-rod travel 10.5 mm and  $15^{0}$  after start of delivery.

Note remarks

Test sheet : CAS 8,3 a15 Edition : 24.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 045

Injection pump

Pump designation : PES6A100D420LS3024

EP type number : 0 411 206 008

Governor

: RSV375...1100A2B798D Governor design.

: 0 420 235 192 Governer no.

Customer-spec. information Customer

Engine : A-504 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 0 681 273 009

Inlet press., bar : 1.0

Test nozzle holder

assembly : 0 681 343 009

Openino

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10 : (1,95...2,15)

Rack travel in mm : 9,00...12,00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10,85...10,95

Del.quantity cm3/: 12,5...12,7

100 s: (-)

: 0,3 Spread cm3

100 s: (-)

rpm : 375 2nd speed Rack travel in mm: 6,00

Del.quantity cm3/: 1,7...2,3

100 s: (-) cm3 : 0.3Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1100

Del.quantity : 125,0...127,0

1000 : (-) cm3 : 3,0 1000 : (-)

RATED SPEED

Spread

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 9,90

rpm : 1140...1150 Speed

2nd rack travel in: 3,100

Speed rpm : 1210...1240

4th rack travel in: 1300

rpm : 0,20...1,20 Speed

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 5,50

Testing:

rpm : 150 Speed Minimum rack trave: 19,00 rpm : 375

Rack travel in mm : 5,90...6,10 Rack travel in mm: 3,30

rpm : 440...460 Speed rpm : 600

Speed Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 10,90 2nd speed rpm : 750

Rack travel in m: 11,50...11,70

3rd speed rpm : 600

Rack travel in m: 11,70...11,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 133,0...136,0 1000 s: (-)

cm3 : 4,0 Spread

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8,0

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130,0...136,0

1000 s: (-)

Rack travel in mm : 14,30...14,60

HIGH IDLE

1st version

Speed rpm : 1215
Rack travel in mm : 4,50
Del.quantity cm3/ : 25,0...31,0

1000 s: (-)

cm3 : 4.0Spread

1000 s: (-)

LOW IDLE

rpm : 375 Speed Rack travel in mm : 6,00

Del.quantity cm3/: 16,8...22,8

1000 s: (-)

Remarks:

Note remarks

Test sheet : CAS 8,3 a14 : 24.8.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 276 046

Injection pump

Pump designation : PES6A95D420LS3024 EP type number : 0 411 296 996

Governor

Governor design.: RSV375...1100A2B799D

Governer no. : 0 420 235 194

Customer-spec. information Customer

: A 504 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openino.

pressure, bar : 172...175

Test lines : 9 681 271 020

Outside diameter x Wall thickness

: 6.35x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 1.95...2.05 Prestroke mm : (1.90...2.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 9.3...9.4

100 s: (-)

Spread cm3 : 3.0

100 s: (-)

rpm : 375 2nd speed

Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 1.7...2.1

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 93.5...94.5

1000 : (-) cm3 : 3.0 1000 : (-)

Spread

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 8.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1180...1210

4th rack travel in: 1250

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 5.30 Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm: 375

Rack travel in mm: 5.70...5.90 Rack travel in mm: 2.00

rpm : 465...525 Speed

грт Speed : 550 Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 9.35...9.45

2nd speed rpm : 800

Rack travel in m: 9.55...9.85

3rd speed rpm : 700

Rack travel in m: 9.65...9.75

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 92.5...98.5 1000 s: (-)

cm3 : 4.0 Spread

1000 s: (-) rpm : 700

Speed Del.quantity cm3/: <96.0 1000 s: (-)

Spread cm3 : 4.0

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...140.0 1000 s: (-)

Rack travel in mm : 14.30...14.50

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 3.70...3.90 Del.quantity cm3/ : 11.0...21.0

1000 s: (-)

Spread cm3 : 4.01000 s: (-)

LOW IDLE

Speed rpm: 375
Rack travel in mm: 5.70...5.90 Del.quantity cm3/ : 17.0...21.0

1000 s: (-)

Spread cm3 : 3.01000 s: (-)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : SCA 8,0 q : 18.07.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 137

Injection pump

Pump designation : PE6P100/720RS140

Governor

Governor design. : RQ200/1200PA102R

Customer-spec. information Customer : SCANIA

Engine : DS 8

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 40...45

Overflow valve

: 1 413 417 025

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6,00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

: 2,5...2,6 : (2,45...2,65) Prestroke mm

Rack travel in mm : 9,00...12,00

: 1-5-3-6-2-4 firing order

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0,50 (0,75)

NO2

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm: 13,50

Del.quantity cm3/: 12,2...12,6

100 s: (-)

Spread cm3 : 0.5

100 s: (-)

rpm : 225 2nd speed Rack travel in mm : 6,00 Del.quantity cm3/ : 1,0...1,2

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1270

Rack travel in mm : 15.60...16.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Del.quantity : 123,0...127,0

1000 : (-)

RATED SPEED

1st version

Setting point:

rpm : 1270 Rack travel in mm: 15.8

Testing:

1st rack travel in: 12.50 Speed rpm: 1245...1260 2nd rack travel in: 3.60

rpm : 1405...1435 Speed

4th rack travel in: 1500

rpm : 0,00...1,00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 6.15

Testing:

Speed rpm : 180 Minimum rack trave: 7,00 Speed rpm : 250

Rack travel in mm : 5,50...6,80

Rack travel in mm: 2.10

Speed : 480...520 rpm

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 113,0...117,0 1000 s: (-)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12,50 Speed rpm : 1220

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 19,0...24,0 1000 s: (-)

#### HIGH IDLE

1st version

rpm : 1300 Speed

Del.quantity cm3/: 29,0...34,0 1000 s: (-)

## LOW IDLE

Speed rpm : 225 Del.quantity cm3/ : 11,0...13,0 1000 s: (-)

#### Remarks:

Start-of-delivery setting without ROBO diaphragm.

Start-of-delivery setting with ROBO diaphragm.

Note remarks

: SCA 8,0 p Test sheet Edition : 18.07.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 232

Injection pump

Pump designation : PE6P100A720RS201

Governor

Governor design. : RQ200/1200PA102R

Customer-spec. information : SCANIA Customer

Engine : DS 8

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 925

Inlet press., bar : 1.5

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6,00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,50...2,60

: (2,45...2,65) Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing Phasing : 0-60-120-18 Tolerance + - 0 : 0,50 (0,75)

**NO4** 

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm: 13,50

Del.quantity cm3/: 12,2...12,6

100 s: (-)

Spread cm3 : 0.5

100 s: (-)

rpm : 225 2nd speed Rack travel in mm: 6,00

Del.quantity cm3/: 1,0...1,2

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1270 Speed

Rack travel in mm : 15.60...16.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 123,0...125,0

1000 ; (-)

RATED SPEED

1st version

Setting point:

rpm : 1270 Rack travel in mm: 15.8

Testing:

1st rack travel in: 12,50 Speed rpm : 1245...1260

2nd rack travel in: 3,60

Speed rpm : 1405...1435

4th rack travel in: 1500

Speed rpm : 0,00...1,00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 730 Speed

Rack travel in mm : 0.00...0.01

Testing:

Speed rpm : 180 Minimum rack trave: 7,00 Speed rpm : 250

Rack travel in mm : 5,50...6,80

Rack travel in mm : 2.1

Speed rpm : 480...520

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 113,0...117,0 1000 s: (-)

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12,50 Speed rpm : 1220

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 19,0...24,0 1000 s: (-)

### HIGH IDLE

1st version

Speed rpm : 1300 Del.quantity cm3/ : 29,0...34,0 1000 s: (-)

### LOW IDLE

Speed rpm : 225

Del.quantity cm3/: 11,0...13,0

#### Remarks:

Start-of-delivery setting without ROBO diaphragm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : ALO 13,8 i : 24.8.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 349

Injection pump

Pump designation : PE6P120A420LS314 EP type number : 0 411 826 088

Governor

: RQV300...950PA314KR Governor design.

Governer no. : 0 421 815 105

Customer-spec. information

Customer : ALLIS CHALMERS

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 0025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter x Wall thickness

: 8,00X2,00X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

**N06** 

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.00

Del.quantity cm3/: 27.0...27.6

100 s: (-)

Spread cm3 : 0.8

100 s: (-)

rpm : 300 2nd speed

Rack travel in mm: 2.1...2.7

Del.quantity cm3/: (-)

100 s: 0.6

cm3 : (-)Spread

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1050

Rack travel in mm : 15.00...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 210.0...212.0

1000 : (-)

Spread cm3 : 6.0 1000

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 8.60

rpm : 990...1000 Speed

2nd rack travel in: 3.30

Speed rpm : 1135...1165

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 200 Minimum rack trave: 7.40 rpm : 350

Rack travel in mm : 3.00...5.20

Rack travel in mm: 3.00

Speed rpm: 390...410 Speed rpm: 510 Maximum rack trave: 1.30

START CUT-OUT

Speed 1/min: 150...250

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 750
Del.quantity cm3/: 197.6...200.4
1000 s: (-)
Spread cm3: 10.0
1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.60

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MB 11,6 a Edition : 15.08.89 Replaces : 7.4.89 Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Tolerance + - 0 Combination no. : 0 401 846 494 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P100A720RS473 EP type number : 0 411 806 196 BASIC SETTING Governor Governor design. : RQ300/1100PA269-1 rpm: 1100 1st speed : 0 421 801 237 Governer no. Rack travel in mm : 12.50...12.60 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 12.0...12.2 : 0M 355 Engine 100 s: (11.8...12.4) : 177.0 cm3 : 0.31st version kW Spread : 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm: 8.1...8.3 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.5) Overflow valve cm3 : 0.3Spread : 1 417 413 025 100 s: (0.5) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Overflow Decree: -1 quantity min. 1/h: 100...120 Speed rpm : 600 Rack travel in mm : 13.40...13.90 Test nezzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly Opening 1st version : 172...175 rpm : 1100 pressure, bar Speed : 120.0...122.0 Del.quantity : (118.0...124.0) : 3.50 1000 Test lines : 1 680 750 015 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 13.6

Testing:

1st rack travel in: 11.50

Speed rpm : 1140...1150

**80**M

Outside diameter x Wall thickness

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

x Length mm

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm : 6.1

Testing:

Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm : 300

Rack travel in mm: 6.00...6.30 Rack travel in mm: 2.00 rpm : 350...390 Speed

## FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 110.0...114.0 1000 s: (107.5...116.5)

cm3 : 5.00 Spread 1000 s: (7.00)

### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

Note remarks

Test sheet : VOL 10,0 o
Edition : 02.05.89
Replaces : 9.10.87
Test oil : ISO-4113

Combination no. : 0 401 846 745

Injection pump

Pump designation : PE6P110A320RS3080 EP type number : 0 411 816 722

Governor

Governor design.: RQV250...1100PA589

Governer no. : 0 421 813 307

Customer-spec. information Customer : VOLVO

Engine : TD 100 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...174

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x-600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{0}$  : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

100 8: (10.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1) cm3 : 0.3

Spread cm3 : 0.3 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.30

2nd speed rpm : 370

travel mm : 2.60...3.00

3rd speed rpm : 430

travel mm : 3.50...3.90

4th speed rpm : 1160

travel mm : 8.10...8.30

5th speed rpm : 1210

travel mm : 9.40...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

N10

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.30

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 4...12

Testing:

Speed rpm : 100 Minimum rack trave: 5.30 Speed rpm : 250

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

rpm : 270...380 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 12.30...12.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 610

Rack travel in m: 12.10...12.20

3rd pressure hPa : 280

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 700

Del.quantity cm3/: 121.0...124.0

1000 s: (118.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...190.0

1000 s: (156.0...196.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : SCA 9,0 j : 07.02.89 Test sheet : 0-60-120-180-240-300 Phasing Edition Tolerance + - 0 Replaces : 12.1.89 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 849 BASIC SETTING Injection pump Pump designation : PE6P120A320RS3196 1st speed rpm : 700 EP type number : 0 411 826 763 Governor Rack travel in mm : 10.40...10.50 Governor design. : RQV200...1100PA729-1 Governer no. : 0 421 813 470 Del.quantity cm3/: 13.3...13.5 100 s: (13.0...13.8) Customer-spec. information Customer : SAAB-SCANIA cm3 : 0.5Spread : DS9 06 Engine 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.3 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 2.2...2.6 100 s: (-) cm3 : 0.3 Overflow valve Spread : 1 417 413 025 100 s: (0.6) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 225 : 0.50...0.90 Opening travel mm pressure, bar : 207...210 2nd speed rpm : 350 travel mm : 2.00...2.60 Orifice plate rpm : 650 3rd speed diameter mm : 0,8 travel mm : 4.90...5.50 rpm : 1145 4th speed : 8.30...8.50 travel mm Test lines : 1 680 750 015 5th speed rpm : 1250 : 9.20...9.60 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 x Length mm Control-lever position Degree: -1 rpm : 1120 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 : 133.0...135.0 Del.quantity 1000 : (130.0...138.0) cm3 : 5.00 1000 : (8.00) Prestroke mm : 5.00...5.10 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

N12

Spread

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 27...35

Testing:

Speed : 100 rom Minimum rack trave: 6.20

rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

rpm : 300...360 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1100 Speed

Del.quantity cm3/: 145.0...153.0

1000 s: (143.0...155.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

LOW IDLE

Speed : 225 rpm

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 130 before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

Test sheet : MB 18,3 c Edition : 20.6.88 Replaces : 10.85 Test oil : ISO-4113

Combination no. : 0 401 849 705

Injection pump

Pump designation : PE10P110A320LS3818

Governor

Governor design. : RQ300/1150PA437-2

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 423 Engine

: 261.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.10...3.20 Prestroke mm

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

: 1- 8- 7- 6- 3- 5-2- 10- 9- 4 Firing order

Phasing : 0-27-72-99-144-171-2

16-243-288-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

Spread cm3: 0.4

100 s: (0.8)

rpm : 300 2nd speed

Rack travel in mm: 7.9...8.1 Del.quantity cm3/ : 1.2...2.0

100 s: (0.9...2.3)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 600 Speed

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 126.0...128.0

1000 : (123.5...130.5) cm3 : 4.00

Spread

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 13.5

Testing:

1st rack travel in: 10.20

rpm : 1190...12.05 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 8.0

Testing:

rpm : 100 Speed Minimum rack trave: 9.50
Speed rpm: 300
Rack travel in mm: 7.90...8.10
Rack travel in mm: 2.00

Speed rpm : 430...470

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.20...11.30

2nd speed rpm : 600

Rack travel in m: 11.70...11.90 3rd speed rpm : 900

Rack travel in m: 11.60...11.80

## FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 109.0...113.0 1000 s: (106.0...116.0)

Speed rpm : 900 Del.quantity cm3/ : 118.0...123.0 1000 s: (115.0...126.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

rpm : 1190...1205 Speed

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Note remarks

: PEN 7.0 b 2 Test sheet Edition : 28.06.88 Replaces : 05.84

Test oil : ISO-4113

Combination no. : 0 401 876 272

Injection pump

Pump designation : PE6P110A320RS260W EP type number : 0 411 816 154

Governor

Governor design. : RSV250...1250P0/374-

: 0 421 833 068 Governer no.

Customer-spec. information

Customer : VOLVO-PENTA

Engine : TAMD 70E

1st version kW : 228.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. <sup>0</sup>C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

N16

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50(0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 14.1...14.3

100 s: (13.8...14.6)

cm3 : 0.40 Spread

100 s: (0.75)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 900

Del.quantity : 141.0...143.0 1000 : (138.0...146.0)

cm3 : 4.0

Spread 1000 : (7.5)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 11.10

Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1390...1420

4th rack travel in: 1510

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 5.70
Speed rpm: 250
Rack travel in mm: 6.10...6.30
Rack travel in mm: 2.00 Speed rpm : 480...540 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed Pressure hPa : 900 Rack travel mm : 12.10...12.20 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.00...9.40 2nd pressure hPa : 590 Rack travel in m: 11.30...11.40 3rd pressure hPa : 300 Rack travel in m: 9.70...9.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm: 700 Del.quantity cm3/: 85.0...88.0 1000 s: (82.0...91.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 250 Speed Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 11.0...15.0

cm3 : 3.0 1000 s: (6.0) Remarks:
APPLICATION
Navy

N17

Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : PEN 7.1 b Test sheet : 0-60-120-180-240-300 Phasing Tolerance + - 0 : 27.06.88 Edition : 0.50(0.75) Replaces : 10.85 Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 876 315 BASIC SETTING Injection pump rpm : 700 1st speed Pump designation : PE6P110A320RS492 EP type number : 0 411 816 161 Rack travel in mm : 12.60...12.70 Governor Governor design. : RSV650...750P4/421 Del.quantity cm3/: 13.4...13.6 Governer no. : 0 421 833 120 100 s: 13.1...13.9 Customer-spec. information cm3 : 0.40 Customer : VOLVO-PENTA Spread Engine : TJD716 100 s: (0.75) 1st version kW : 127.0 rpm : 650 2nd speed : 1500 Rated speed Rack travel in mm : 4.40...4.60 Del.quantity cm3/ : 1.6...2.0 TEST BENCH REQUIREMENTS 100 s: (1.3...2.2) cm3 : 0.30Spread Test oil 100 s: (0.60) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 417 413 025 Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Inlet press., bar : 1.50 Test nozzle holder Governor spring pre-tension assembly : 0 681 343 009 Click setting x : 2.75FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 172...175 1st version rpm : 700 Speed Test lines : 1 680 750 015 Del.quantity : 134.0...136.0 1000 : (131.0...139.0) cm3 : 4.0 Outside diameter Spread x Wall thickness 1000 : (7.5) x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control lever per values position degrees: 35...43 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 11.6 Speed rpm : 750...755 2nd rack travel in: 4.0 Speed rpm: 775...785 Prestroke mm : 3.00...3.10

4th rack travel in: 930

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

N18

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 29...37 Setting point w/out bumper spring

Speed rpm: 650
Rack travel in mm: 6.10
Speed rpm: 650
Rack travel in mm: 6.00...6.20

Rack travel in mm : 2.00

Speed rpm : 660...700

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 750...755 Speed

LOW IDLE

Speed rpm : 650

Rack travel in mm : 6.00...6.20

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

**APPLICATION** 

Generator set

Note remarks

Test sheet : ALO 12,0 a Edition : 23.08.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 169

Injection pump

Pump designation : PES6P120A320RS358

Governor

Governor design. : RQV375...1250PA385KR

Customer-spec. information

Customer : ALLIS-CHALMERS

: 12 LITRE Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 443 022 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter x Wall thickness

: 8,00X2,00X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,80...2,90

: (2,75...2,95)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing : U-6U-12U-18U Tolerance + - 0 : 0,50 (0,75)

N20

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 9,80

Del.quantity cm3/: 20,3...20,5

100 s: (20,1...20,7)

Spread cm3 : 0.5

100 s: (-)

rpm : 375 2nd speed Rack travel in mm : 4,90
Del.quantity cm3/: 2,2...2,8
100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1320 Speed

Rack travel in mm : 15,00...17,60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 203,0...205,0 Del.quantity

1000 : (201,0...207,0)

cm3 : 5,0 Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Setting point:

Speed : 1320 rpm Rack travel in mm: 16,3

Testing:

1st rack travel in: 8,80

rpm : 1290...1300 Speed

2nd rack travel in: 3,50 Speed rpm: 1525...1555

4th rack travel in: 1620

rpm : 0,00...1,00 Speed

LOW IDLE 1

Control lever

position degrees: 9...17

Setting point w/out bumper spring

rpm : 300 Speed

Rack travel in mm: 8,55 Testing: Speed rpm Minimum rack trave: 4,70 rpm : 400 Speed Rack travel in mm: 3,50...5,70
Rack travel in mm: 1,10
Speed rpm: 590...610
Speed rpm: 620 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 9,80 2nd speed rpm : 1000 Rack travel in m: 9,75 3rd speed rpm : 800 Rack travel in m: 9,70 START CUT-OUT Speed 1/min : 220...280 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 183,0...187,0 1000 s: (181,0...189,0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,80 rpm : 1290...1300 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 115,0...155,0 1000 s: (-) LOW IDLE Speed rpm : 375 Del.quantity cm3/: 22,0...28,0 1000 s: (-) Remarks: **APPLICATION** Tractor (tractor engines)

N21

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 14,9 f Edition : 09.03.87 Replaces : 25.9.86 Test oil : ISO-4113 : 0 402 048 044 Combination no. Injection pump Pump designation : PES8P120A320RS507 EP type number : 0 412 028 023 Governor Governor design. : RQV275...1050PA665-1 Governer no. : 0 421 813 468 Customer-spec. information Customer : RVI Engine : MIVRO83530C 1st version kW : 280.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness

: 6.00x1.50x1000

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1- 8- 4- 2- 7- 3-Firing order Phasing : 0-45-90-135-180-225-270-315 Tolerance  $+ - \circ$  : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1050 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 18.2...18.4 100 s: (17.9...18.7) cm3 : 0.5Spread 100 s: (0.9) rpm : 275.0 2nd speed Rack travel in mm : 6.2...6.4 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 275 travel mm : 1.40...1.60 2nd speed rpm : 450 : 3.40...3.80 travel mm 3rd speed rpm : 800 travel mm : 5.80...6.00 4th speed rpm : 1050 travel mm : 7.60...7.80 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1140 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Aneroid pressure h: 700 Del.quantity : 182.0...184.0 1000 : (179.0...187.0)

per values \_\_\_\_

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

x Length mm

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.00 Speed rpm : 1105...1115

2nd rack travel in: 4.00

Speed rpm : 1195...1225

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

rpm : 200 Speed Minimum rack trave: 6.40 Speed rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 280...405 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 700 Pressure

Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.50

2nd pressure hPa : 150

Rack travel in m: 10.60...10.80

3rd pressure hPa : 110

Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 650

N23

Del.quantity cm3/: 165.0...171.0

1000 s: (162.0...174.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 116.0...118.0 1900 s: (113.0...121.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.60...4.80

Remarks:

Start-of-delivery mark 130 cam angle

after start of delivery cyl. 1.

Note remarks

Test sheet : RVI 14,9 f2 Edition : 27.03.87

Replaces

Test oil : ISO-4113

Combination no. : 0 402 048 045

Injection pump

Pump designation : PES8P120A320RS507

EP type number : 0 412 028 023

Governor

Governor design. : RQV275...1050PA665

Governer no. : 0 421 813 370

Customer-spec. information Customer : RVI

Engine : MIV\$083530

1st version kW : 268.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 firing order : 1- 8- 4- 2- 7- 3-

6- 5

Phasing : 0-45-90-135-180-225-

270-315

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.2...11.3

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

\_\_\_\_\_

Spread cm3:0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 1.4...2.9

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.30...1.70

2nd speed rpm : 400

travel mm : 3.00...3.50

3rd speed rpm : 525

travel mm : 4.00...4.40

4th speed rpm : 650

travel mm : 4.90...5.30

5th speed rpm : 1050

travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 peed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 700 Del.quantity : 187.0...189.0 1000 : (184.0...192.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.20 rpm : 1105...1115 Speed

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed : 100 rpm Minimum rack trave: 6.40 Speed rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 290...405 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

pm : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 280

Rack travel in m: 10.80...10.90 3rd pressure hPa : 220

Rack travel in m: 9.50...9.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

N25

Aneroid pressure h: 700 Speed rpm : 650

Del.quantity cm3/: 170.0...176.0

1000 s: (167.0...179.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 114.0...116.0

1000 s: (111.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1105...1115

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

: 275 Speed rpm

Rack travel in mm: 4.50...4.80 Del.quantity cm3/: 14.0...20.0

1000 s: (11.0...23.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 130 cam angle

after start of delivery cyl. 1.

Note remarks

Test sheet : RVI 14,9 e Edition : 13.05.87 Replaces : 5.85 Test oil : ISO-4113

Combination no. : 0 402 048 701

Injection pump

Pump designation : PES8P120A320RS3124

EP type number : 0 412 028 701

Governor

Governor design. : RQ750PA596 Governer no. : 0 421 801 149

Customer-spec. information Customer

Engine : MIVS (R) 083530

1st version kW : 320.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-4-2-7-3-

6- 5

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 26.7...26.9

100 s: (26.4...27.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack cravel in mm: 4.2...4.4 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700 : 267.0...269.0 Del.quantity 1000 : (264.0...272.0)

cm3 : 5.00

Spread 1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.40 Speed rpm : 750...755

2nd rack travel in: 4.00

rpm : 775...785 Speed

4th rack travel in: 900

rpm : 0.00...1.00 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 750...755

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.